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San Francisco, Calif.

Load Building and Merchandising Number

October 15, 1926
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Journal of Electricity

Devoted to the Economic Production and Commercial Application of Electricity
IN THE ELEVEN WESTERN STATES

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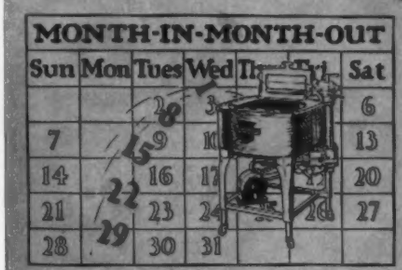

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IN THE ELEVEN WESTERN STATES

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BECAUSE considerably more time than was anticipated has been required for the analysis of the reports on the status of electric refrigeration in the West, it has been impossible to include this material in this issue of the Journal of Electricity. McGraw-Hill editors covered the important cities throughout the country to get a true picture of the refrigeration situation. Conditions nationally will be discussed in an early issue of Electrical World while a special analysis of the Western situation will be presented in the next issue of the Journal of Electricity. Every phase of the subject will be considered from the standpoint of manufacturer, distributor, dealer and central station. This article should be of the utmost interest to practically every man and woman in the industry on account of the extreme importance of the subject matter.

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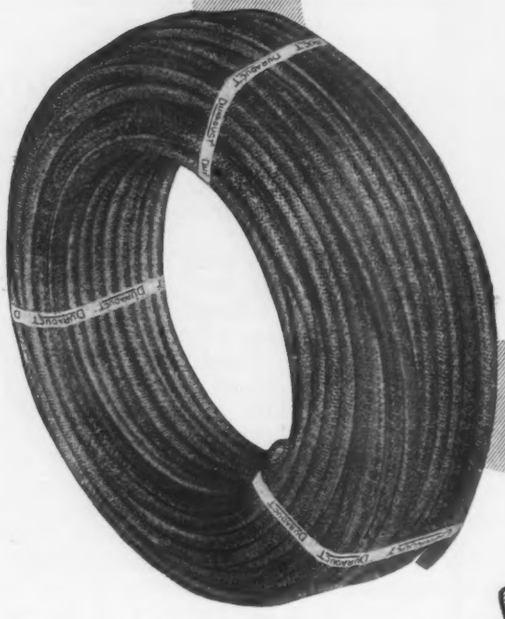

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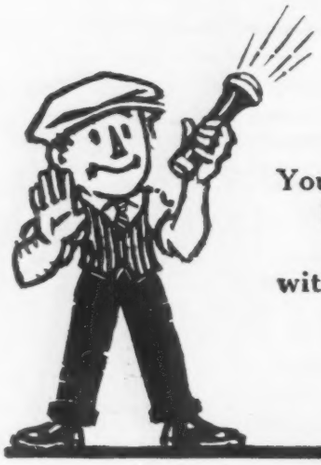

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EDITORIAL

A Sales Job That Demands Teamwork

NO business can show greater progress than that made by the electrical industry in the solution of its engineering, financing, accounting and public relations problems. Many—and here one is tempted to say all—can show far greater strides in the solution of their marketing and sales problems. Few gatherings of electrical men have been held this year in which emphasis has not been placed upon the importance of better sales methods for both electrical products and electrical service; few meetings have been held in which the weaknesses of the present sales structure have not been pointed out and constructive suggestions offered for its improvement.

WERE this selling problem one of load-building alone, then the responsibility would lie largely with the central station because its chief interest is in the disposal of increasing quantities of kilowatt-hours. However, the ramifications of the problem include the sale of wiring installations which will permit of the maximum convenient use of the services electricity provides; hence the contractor has a vital interest. It includes the sale of the appliances, devices and equipment for the utilization of electrical energy; hence the dealer becomes immediately an important link in the chain. Because the jobber is a necessary factor in the distribution scheme he, too, is interested; and because the manufacturer produces both the machinery for the generation of energy and the equipment and devices for its utilization he, also, is vitally concerned.

PRIMARILY, though, the success or failure of the selling program will have its greatest effect upon the power companies and from them should come guidance and leadership. The policy pursued by the central stations will determine the efficacy of the program. If the best use is made of the existing means for load-building through the greater distribution of energy-consuming appliances and devices, and if a plan is devised that will encourage the maximum number of outlets to participate, then it is conceivable that progress will be made.

PERHAPS it is a Utopian dream to hope for a plan which will center around a spirit of teamwork and co-operation rather than around a policy which will permit destructive competition between the distribution outlets. It is obligatory for the central stations to see that all elements work in perfect harmony rather than to permit dissension to enter the ranks of the industry.

WITH but slightly more than ten per cent of the possible field electrified, the industry is confronted with an enormous sales task. Even with every branch working in perfect unanimity and at the maximum pitch the selling job is big enough to furnish work for all for many years to come.

The Industry Is Offered a Unique Opportunity

"A SOUND merchandising policy is the solution of the public relations problem," said Robert F. Pack, president of the National Electric Light Association, in an address before the Northwest Electric Light & Power Association at Spokane, Wash., last June.

With that as his theme, A. N. Robertson, electragist of Santa Ana, Calif., has written the report of the Merchandising Section of the California Electragists, presented elsewhere in this issue.

Naturally, the report represents the views of his committee and undoubtedly there will come objections of one kind or another from the other branches of the industry. Those objections, however, are relatively insignificant as compared to the larger issue involved, namely, that Mr. Robertson's report offers a basis upon which negotiations between central statons, manufacturers, jobbers and contractor-dealers may be commenced for the purpose of arriving at a merchandising policy that will fulfill the requirements set forth by Mr. Pack.

The Electragists have taken the initiative. "Barkis is willin' ". What is the next step? Joseph Fowler, president of the Electragists International, furnished the answer when he spoke of the forthcoming meeting between all the electrical interests in New York for the purpose of dscussing the all-metal code in house-wiring. At that meeting there will be present a chairman and representatives of all branches of the industry, namely, central stations, manufacturers, jobbers and contractor-dealers. They will thrash out point by point from a previously prepared agenda the fundamentals involved in the problem, and, we hope, arrive at a conclusion that will become a definite policy of the industry as a whole.

What better procedure could be adopted by the industry in California toward the end that a sound merchandising policy may be established within the state?

Now that the foundation for a better merchandising policy has been laid, it is to be hoped that the matter will be followed through vigorously, and that the conferees will approach the question with open minds. Obviously the conclusions will consist of a series of compromises arrived at on a reasonable give-and-take basis by all parties concerned. The result will be far-reaching. The opportunity for welding the industry into a harmonious whole is unique. May the industry be big enough to grasp the opportunity.

Commercial Section Merits Executive Support

IN following the program of the Commercial National Section in concentrating committee work on specific tasks and eliminating those committees which have neither tasks nor meaning the Commercial Section of the Pacific Coast Electrical Association has taken a forward step. As set down on another page of this issue the executive committee of the section has laid out a splendid program for the committees for the coming year. Every task is specific and at the same time one that will have a definite bearing upon the commercial progress of the industry.

One of the ailments of the section in the past and one of which the members directing the section's work have been thoroughly cognizant has been the lack of executive support. If not entirely apathetic the interest of executives has been only lukewarm. The program outlined by the section should do much toward changing this condition. If the program is followed out and the section can point to definite achievements by the time of the next convention, it is conceivable that the apathy of the past will turn to interest and support of the type the section merits.

Another Case of the Bald-Headed Barber

THE analogy of the bald-headed barber selling hair tonic has been applied often to the members of the industry who recommend or sell electric appliances which they themselves do not use in their own homes. This same analogy aptly fits the case of a Western central station with reference to the industrial heating field.

In this instance a new installation of equipment was made at the company's shops. This included a coil-baking oven using steam for heat, a brass furnace fired with oil, and an iron melting furnace burning coke. The commercial department of this same company is engaged in an industrial heating sales campaign in which electricity is recommended for each of these applications. Seemingly it is rather a short-sighted policy that would permit the installation of such equipment for company use rather than make model electrical installations which might serve the commercial department in excellent fashion for demonstration purposes. If this information were to become generally known among customers, would not these latter be inclined to think of the physician who refuses to take his own medicine or the valet whose trousers were always unpressed?

Complacency Is Symptom of Dangerous Condition

SELF-CONFIDENCE and self-satisfaction are powerful factors, useful and valuable when partaken of in small and well regulated quantities and extremely dangerous otherwise. And this applies to the corporation as well as to individuals. For a utility executive to permit himself to ponder upon the excellent quality of service that his company is giving its customers; to consider with pomposity the vital importance of his utility in communty existence; or to glory in the marvels of its engineering achievements is to follow a road fraught with dangers. The present is no time for introspection or retrospection except for the purpose of determining how service may be extended, its quality improved and operating efficiencies increased.

To be sure, great credit is due the electrical industry for the strides that have been made, likewise

to the individuals within the industry who did the work. However, the industry's biggest job has not BEEN done, but remains to BE done. This job comprises important rate readjustments, the increasing of domestic consumption, rural developments, industrial power-factor adjustments, increased operating efficiencies, and ever-increasing quality of service. Here is a big job—one requiring the unified efforts of the accounting, operating, commercial, and engineering departments. In it there is no place for self-congratulation.

Industry Must Not Be Over-Confident Regarding Outcome of Election

THE millenium will have arrived when an election is held on the Pacific Coast at which a political assault of one character or another is not made upon the utilities. The year 1926 has brought no respite from the usual political procedure. California voters will be presented on Nov. 2 with an old friend who for six years has not even changed his clothes, namely, the $500,000,000 Water and Power Act. Twice decisively defeated, its sponsors are none the less discouraged. The proposed amendment is on the ballot again. It is to be hoped that on this occasion the old saying about the third time being a charm will work—the "charm" being such an overwhelming defeat that the measure will never again be initiated.

In the Pacific Northwest the scene of activity has been shifted from Washington to Oregon. In this latter state an organization known as the Housewives' Council, Inc., has brought forward a water and power bonding amendment like in many respects to the California legislation and in some even more visionary. However, the voters of the state have been informed fully regarding its dangers.

In both states there is a feeling of confidence that these measures will be subjected to a landslide of disapproving votes. There are serious dangers in such a feeling. Many a world series, many a football game and many a golf match have been lost due to over-confidence. The same holds true of elections.

Importance of Electric Refrigeration Industry

WHILE electric refrigeration is the most rapidly growing child in the electrical family today, few realize the enormous growth which this industry has made in the past year. This is forcefully brought home in a recent issue of the Wall Street Journal which says:

> The automatic electric refrigeration industry is increasing so rapidly in importance that facts and figures regarding its standing today are important. Few realize the industry is giving employment directly to 50,000 men, and indirectly to 50,000 more engaged in the production of the raw material it requires. Recent reports show that more than 20,000 men are employed in manufacturing household and commercial units in the United States.
>
> The leading manufacturers have spent a great deal of time and money training salesmen and service men, with the result that there are now in this country more than 15,000 factory branch, distributor, dealer and central power company salesmen selling household and commercial electric refrigerators. The service and installation men number more than 6,000, while those engaged as executives, clerical office help, and others miscellaneously employed, bring the grand total for the industry well above the 50,000 mark.

Predictions were made freely two years ago that this latest electrical product would foreshadow any previous performance of the industry in its development. Progress made to date indicates that such has been the case, and when attention is given to the plans which the manufacturers have announced for 1927, one can see the necessity for stabilization and standardization if further progress is not to be impaired.

The Opportunity Offered by the Red Seal Plan

IN this issue there is a pictorial presentation of the story of the Red Seal campaign prepared by the editors in the belief that even men in the electrical industry are human and therefore like to look at pictures.

The pictorial method of presenting an idea or carrying a message is far older than the art of writing, and represented the first crude attempts at conveying thought other than by word of mouth. Even today, the traffic signs that warn the unwary of dangerous curves or railroad crossings ahead use the pictograph rather than the printed word.

A picture tells its own story while a word or group of words requires a distinct mental effort on the part of the reader in order to grasp the meaning of the writer. There is the "life" of the pictorial as compared to the cold, drab words of print or writing. Thus, with malice aforethought, has the Red Seal pictorial story been presented in this number in order that its significance may be grasped more readily and registered indelibly on the minds of the men of the electrical industry.

Truly, no movement of a co-operative promotional nature ever has been more constructive, or more significant, or more timely than this plan to educate the public to the necessity for adequate house-wiring. The statistician tells us that the domestic electrical field is but 10 per cent saturated. This means that 90 per cent of our homes are awaiting the message of the advantages of the electrical servant. Inadequate house-wiring is one of the most difficult items of sales resistance to overcome. At least, in the light of present-day knowledge of the domestic application of electrical energy, we should not permit the construction of a single home or apartment house without a wiring plan adequate to take full advantage of the use of electrical energy for performing every domestic function.

In the Red Seal plan lies the opportunity for the co-ordinated effort of every branch of the industry, and the responsibility rests squarely on the shoulders of those in charge of our great institutions to see that all hands from the office boy to the president do their share without stint in bringing the 10 per cent saturation point up to 100 per cent. Not until then will the electrical age have arrived.

FROM its two stores, one in Fresno and the other recently opened in Bakersfield, the Valley Electrical Supply Company operates its merchandising plan to add load to the lines of the San Joaquin Light & Power Corporation and its subsidiary, the Midland Counties Public Service Corporation. At these stores a complete merchandising set-up is provided. For the outlying districts, the many small towns scattered throughout the territory served by these power companies, the Valley Electrical Supply Company sells through the dealers located in those towns. The upper photograph reproduced here is one taken of a window display used during the very successful cooker campaign and shows the artistic and effective type of window display employed by this company. The lower photograph is of the newly rearranged Bakersfield store, where extensive remodeling of an old building resulted in this attractive display room.

Load Building with Appliances

By H. H. Courtright

President and Manager, Valley Electrical Supply Company, Fresno

APPLIANCES present a medium for the load-building program of the future—now that in general industrial loads are almost automatically swinging towards electricity. In this article Mr. Courtright, one of the West's foremost merchandising men, describes the means the Valley Electric Supply Company has employed in building load on the lines of the San Joaquin Light & Power Corporation, serving the San Joaquin valley in California. The results obtained from these merchandising plans speak for themselves.

WHETHER or not an active merchandising organization in connection with and yet operated separately from a power company could produce results in increased sales of kilowatt-hours of electrical energy sufficient to justify its existence, has long been a subject of speculation and argument. Hardly a gathering of electrical men convenes these days without a discussion of this problem. There are those who maintain that such an organization does not justify its position and others who maintain otherwise.

It may be clarifying to some extent to present the experience of the Valley Electrical Supply Company of Fresno, Calif., under just such circumstances over several years. While an account of these experiences during the past six months under a well-defined sales plan may not be expected to settle for all time any discussion on this very much debated topic, it may present some aspects not familiar to all those who say that "it can't be done."

Under our arrangements with the San Joaquin Light & Power Corporation, we operate as a separate entity, responsible to that corporation naturally for successful operation, but individual in the conduct of our merchandising programs. In November, 1925, the Valley Electrical Supply Company entered into a contract with the San Joaquin Light & Power Corporation whereby it agreed to distribute a certain number of current consuming devices over the latter's system which consists of approximately 50,000 domestic consumers, during the year 1926.

For this service the San Joaquin Light & Power Corporation agreed to pay to the Valley Electrical Supply Company a stipulated sum for each kilowatt of appliance load represented in such sales.

The program laid out for compliance with the contract included active sales effort according to definite quotas established in the sale of heavy duty appliances, lamp socket appliances, home lighting, the establishment of a new store at Bakersfield and an active participation in engineering of new installations.

It was felt from the very beginning and has always been a policy with the organization, that every logical and sound means should be taken to bring about co-operation between the Valley Electrical Supply Company and individual independent contractor-dealers throughout the territory served by the San Joaquin Light & Power Corporation. That the contractor-dealers of the territory themselves value this co-operation has been demonstrated in many instances. In fact, as a rule, the inauguration of any special campaign on the part of this company has the support and co-operation of 84 dealers in the San Joaquin valley and territory served by the Midland Counties Public Service Corporation, a subsidiary of the San Joaquin Light & Power Corporation.

One of the most notable features of the 1926 campaign so far has been that the largest part of the load added to the lines has been in the districts outside of Fresno, where our store is located, indicating that the dealer tie-up has proved satisfactory in practice.

Another significant point is that the load added to old customers' lines exceeded by an ample margin that installed for new customers coming on the lines. This is the most desirable type of load building, and is a real test of selling.

Heavy Duty Appliances

The first item in the contract called for the Valley Electrical Supply Company to sell or help to sell 1,000 ranges, 800 water heaters, 500 large air heaters and 300 miscellaneous heavy duty appliances, the combined capacity of which was estimated to be 10,800 kw. This quota was distributed among the thirteen districts which make up the territories of the San Joaquin Light & Power Corporation and the Midland Counties Public Service Corporation; the estimate for the first six months of the year being set at 5,356 kw.

This was a high mark to shoot at, but considering that our salesmen were trained men, all of whom have been with us since the organization of the department and some of whom were with us long prior to that time, we felt confident the quota would be met.

And so it has been, for the total connected kilowatts of heavy duty appliances sold during these six months was 5,850, thus exceeding the quota by 494 kw.

Of the 1,101 pieces of heavy duty equipment installed under 786 jobs, 557 jobs or 70.9 per cent were sold to "old" consumers, the remaining 229 jobs —29.1 per cent to "new" consumers. In tabulating

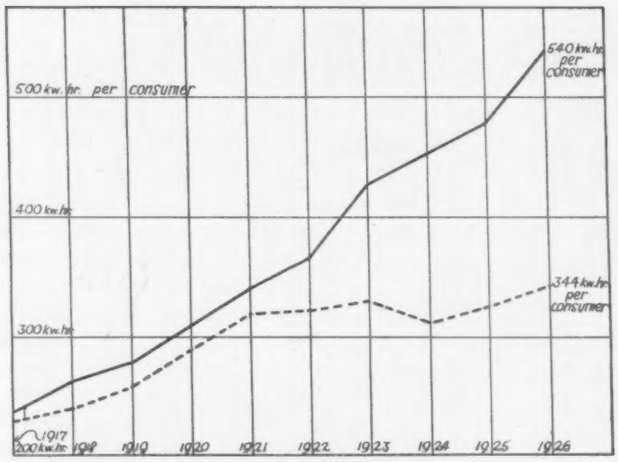


Fig.1. System curves of the San Joaquin Light & Power Corporation, showing average kilowatt-hour per consumer growth in (black line) lighting consumers, including combination light, heat and cooking consumers, and (dotted line) domestic lighting consumers only. The drop in the latter curve is due to a dry year when consumers were urged to conserve power.

these sales we held that any consumer already having a lighting service and a meter in his house was to be considered an "old" consumer.

The accompanying charts, Figs. 1 and 2 are very significant for they show that we have concentrated our selling efforts on those consumers who already possess cooking and heating equipment of some sort in their homes, thereby replacing this equipment with electrical appliances.

Comparing the gross sales of this class of applances the kilowatts connected and the estimated revenue to the power company, we find that the gain in gross sales for the first six months of the year over that of last year amounted to 25.1 per cent. Expressed in kilowatts connected this gain was:

Connected kw. first six months of 1926	5,850.4
Connected kw. first six months of 1925	4,309.9
1926 gain over 1925	1,540.5
or 35.7 per cent.	
Estimated yearly revenue to the power company	$93,606.40
Revenue on appliances sold 1925 the corresponding period	68,958.40
1926 gain over 1925	$24,648.00
or 35.7 per cent.	

The reasons for these gains may be set down as, the increased experience of our trained salesmen; the success of the agent-dealer sales plan; and to local and home demonstrations of appliances.

The Agent-Dealer Sales Plan

Considerable interest attaches to the plan we have found successful in co-operating with electrical dealers throughout the territory served by the power company. Outside of Fresno heavy-duty merchandise is sold to the public through our local agent-dealers—the Valley Electrical Supply Company's salesmen doing all the preliminary work leading up to, as well as closing the deal.

This sale is then reported to our Fresno office for record and the appliance furnished to the dealer at as near our cost price as possible. The dealer pays for his purchase on a C.O.D. basis.

The sale then rests between the consumer and the dealer, who, between themselves, can make their own credit and payment terms——thus leaving the Valley Electrical Supply Company and the power company out of the picture. It must be remembered that many appliances are sold to rural consumers who depend mainly upon crop payments for their yearly income. Our arrangement is therefore an ideal one. The dealer takes care of the credit burden, but he also makes all the profits on the sale. On our part we escape the inevitable collection difficulties nearly always resulting from the sale of merchandise on credit to buyers who receive their income but once a year.

In the city of Fresno where our main store is located, the Valley Electrical Supply Company acts as an agent-dealer also, taking the sales profit on goods it sells directly as well as assuming the credit risk on those sales.

The field sales force, consisting of nine men, has put or helped to put on the power company's lines a total of 5,850 kw. during the first six months of this year. This averages 106 kw. per man per month or six kw. more than the set quota of 100 kw.

In addition to these field men, we employ one supervising salesman and one woman demonstrator, who both cover all districts frequently and at set times. The former checks up on the fieldmen's work, corrects mistakes and smooths over misunderstandings with consumers and dealers, and the latter conducts the cooking demonstrations about to be described.

Cooking Demonstrations

In years past we endeavored to bring electrical cooking before an interested public by supporting large cooking schools, arranged and conducted by the manufacturers of electrical appliances. These

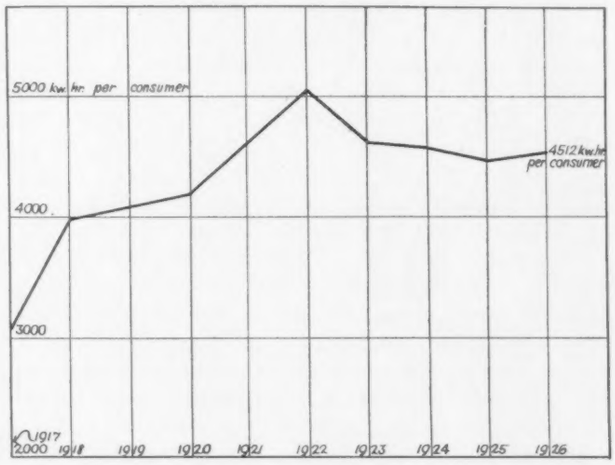


Fig. 2. The San Joaquin Light & Power Corporation system chart showing growth of combination lighting, heating and cooking consumption in kilowatt-hours per consumer. The sharp rise and peak in 1922 were due to sales effort to place automatic water heaters on lines, sold with the idea of leaving them on continuously, a policy since discontinued.

schools were held mostly under the auspices of a local newspaper and staged in some semi-public building—preferably a hotel. The duration of these affairs was from three to five days; at the conclusion of which we gave away valuable prizes for the best bread, cake and pie brought before a group of disinterested judges.

Large crowds were attracted to these schools and well have they filled their purpose—that of bringing electrical cookery to the attention of the greatest possible number of housewives. Soon we found, however, that although the publicity feature of these schools was of great value to us, there were other less desirable angles which finally made us decide to discontinue this type of demonstration.

For instance, the large prizes offered for the best entries of home-bake craft were given regardless of the cooking medium by which they were produced. Such entries might have been made in a wood, gas or oil stove, and it was natural for the winner to feel that since her stove could produce a prize winning article, it would not be wise to discard it in favor of an electrical range of unknown performance.

Also, since the prizes were very valuable ones with a completely installed electrical range usually heading the list—it happened that however carefully the awards were made by absolutely unbiased judges, there would be a feeling of disappointment among the many unsuccessful competitors who considered their entries to be superior to or at least peers with the prize winning one. It was sometimes hinted that the jury was "fixed," and undeserved as was this suspicion, it did not promote a friendly feeling between the public and the Valley Electrical Supply Company.

Again, since the schools attracted large numbers of women from all walks of life, society matrons as well as wage-earners, many of the latter were timid in asking questions about the processes demonstrated but in which they found themselves interested. Most women do not like to be conspicuous and would rather remain in the dark about the subject under discussion than speak up before a large assembly of their kind.

The cost of the schools was very heavy, running in many instances well over $500, and we did not feel that we were enjoying an adequate return for so large an outlay.

Considering all these reasons, we decided that small local demonstrations, frequently held by our own employees, would produce better results at a more moderate cost. This we are doing now, and by this method are establishing satisfactory contacts with the buying public. Following is the usual procedure:

Small Demonstrations Better

We advertise that a cooking demonstration will be held in the stores of our local agent-dealer and invite all interested to attend.

Instead of limiting the demonstration period to a few hours in either forenoon or afternoon, thus again assembling large and unwieldly crowds, our demonstrator gives what might be termed a continuous demonstration starting with the opening of the store and lasting all through the business day. In the morning she may be canning fruit or making pies and pastry, and in the afternoon she usually prepares an entire meal, all the while showing the onlookers the most economical way of using an electrical range.

In this way electrical cooking is demonstrated to ever-varying small groups of women, any one of whom may ask the demonstrator such questions as may come to her mind, and receive an intelligent and personal answer.

The meal prepared in the afternoon may be served either to the visitors or lots may be drawn for it amongst them. In addition we gave away one or two small electrical appliances, such as a cooker and a toaster, which, while inexpensive, help to make the recollection of the demonstration an agreeable one.

Finally, the dealer, with the assistance of the demonstrator, takes the names of all likely prospects and sees to it that these leads are turned over to the Valley Electrical Supply Company's salesman for follow-up. Through this type of store demonstrations we have secured more live prospects and made more actual sales than were ever realized during the course of our former elaborate and expensve cooking schools.

Lamp Socket Appliances

As a second item in its contract the Valley Electrical Supply Company undertook to sell a total of 20,000 lamp socket appliances during the entire year. This quota was made up as follows:

Left: One of the attractive lamp window displays at the Valley Electrical Supply Company, Fresno, during the home lighting campaign. Center: A cooking demonstration set up in the store of a hardware dealer in Parlier, Calif., one of the small towns in the valley. Right: A striking window display used during the very successful cooker campaign.

As some of these appliances are of seasonal character and only sold during the colder months, also because Christmas with its increased demand for electrical merchandise comes in the latter part of the year, the sales quota for the first six months was set at less than half the yearly total. Thus a quota of 7,250 pieces (3,193 kw.) was alloted to the first six months of the year. The actual sales have exceeded this quota by 1,185 pieces (511 kw.) thus bringing the total to 8,435 pieces (3,705 kw.).

Durng each of the past six months we intended to campaign one special appliance, as follows:

January ..... waffle irons
February ..... toasters
March ..... percolators
April, May June ..... cookers
June ..... fans

These appliances, in addition to being sold through our Fresno and Bakersfield stores, were also retailed through our agent-dealers. The delivery of waffle irons for the January campaign being delayed, we found it necessary to postpone this and all following campaigns thirty days. This made us lose the first month of our half year's period as regards intensive selling and necessitated a complete rearrangement of our campaign plans.

The following figures show interesting comparisons of gross sales, kilowatts connected and estimated power company earnings on lamp socket appliances for the first half of 1926 as compared with the same months of 1925. Gross sales increased 65.6 per cent during this period.

Kilowatt connected load for:

First six months of 1926 ..... 3,704.8 kw.
First six months of 1925 ..... 1,505.6 kw.

1926 gain over 1925 ..... 2,199.2 kw.
or 146 per cent.

Estimated yearly revenue on appliances sold:
First six months of 1926 ..... $37,048.00
First six months of 1925 ..... 15,056.00

1926 gain over 1925 ..... $21,992.00
or 146 per cent.

Eighty per cent of this volume was moved through our own stores, both in Fresno and in Bakersfield, and twenty per cent through our agent-dealers in the districts. Goods were billed to these agents at an advance of 10 per cent over our cost; this addition to cover our expense of warehousing and reshipping.

Dealer Plan for Small Appliances

A very definite agent-dealer plan for sale of small appliances was also worked out to operate in territory outside of Fresno and Bakersfield. Fifteen days prior to the start of one of the monthly appliance special campaigns one of our salesmen called on every dealer in the territory served by the power company, offering each one an opportunity to tie in with our special sales.

During this period just past 84 dealers have cooperated in these plans. Each one willing to cooperate was asked how many of the special appliances he felt sure he could dispose of and was urged to estimate the number conservatively. The salesman thereupon left with the dealer the required number of appliances, receiving in exchange a check for them in each case. The appliance was sold to the dealer at 30 per cent below the listed sale price of the appliance or at practically its cost to the Valley Electrical Supply Company.

Each dealer was then urged to display the special appliance prominently and to use every call for the special as an opportunity to attempt to sell the standard lines of these appliances rather than the special, at the regular list price. This, he was told, would net him 40 per cent on each sale instead of 30 per cent and be fairer to the jobber. In other words, he was urged to use the special as a leader from which to better his own sales on standard lines.

Promptly on the morning after the close of each campaign the salesman called to take back the advertised special, refunding money on each appliance unsold. In this way dealers were obliged to close the special sales simultaneously in every part of the territory. The appliances were also withdrawn so that dealers might not continue to display them at the feature price and thus tend generally to reduce prices.

In each case broadsides and newspaper advertisements used in connection with the campaigns carried the names of the indivdual dealers who were co-operating in the district in which they were distributed. This proved valuable advertising to the dealer and boosted his sales, as well as acquainting his district with his store. Other dealer helps were furnished also.

TABLE I

LAMP SOCKET APPLIANCES—USE AND EARNINGS

Appliance	Rated Wattage	Hours Per Yr. Use	Kw-hr. Per Yr. Use	Rate Per kw-hr.	Annual Rev. per Appliance	Annual Revenue per kw.	Number of Appliances to be sold in 1926	Total kw. to be sold in 1926	Annual Revenue from 1926 sales
Cookers	400	364	145.6	$.07	$10.19	$25.47	6000	2400	$61,140
Air heaters	600	360	216.0	.07	15.12	25.20	3000	1800	45,360
Toasters	550	104	57.2	.07	4.00	7.27	2500	1375	10,000
Waffle irons	660	104	68.6	.07	4.80	7.27	1500	990	7,200
Flat irons	600	156	93.6	.07	6.55	10.92	1400	840	9,170
Fans	60	450	27.0	.05	1.35	22.50	1200	72	1,620
Table stoves	660	91	60.1	.07	4.21	6.38	500	330	2,105
Vacuum cleaners	200	104	20.8	.07	1.46	7.30	400	80	584
Soldering irons	250	624	156.0	.04	6.24	24.96	300	75	1,872
Battery chargers	100	1560	156.0	.07	10.92	109.20	200	20	2,184
Percolators	420	120	50.4	.07	3.53	8.40	2500	1050	8,825
								9032	150,060

Average revenue per kw. on above basis $16.61
Average revenue per kw. on 1c lower rate 14.14
Average used in estimating earnings 10.00

Of the four appliance sales featured during the first six months of the year, the waffle iron and the cooker campaigns were the most successful in point of quantity sold. In both these sales we disposed of many more appliances than we originally estimated, the waffle iron sales even totaling more than double the set quota. Accompanying tables show the results of these.

Home Lighting

Last year we inaugurated a house-to-house sales campaign on all-white Mazda kitchen lamps, and sold to 40 per cent of our consumers in the city of Fresno. No special effort was put forth in this direction this year, but through such desultory canvassing as has been carried on we have sold 1,452 of these lamps, thereby putting on the power company's lines a total of 145.2 kw. Sales cost of this service was $5.71 per kw. or $828.09. Estimated yearly revenue to the power company on these lamps at $3.75 per lamp was, however, $5,445.

Our New Bakersfield Store

During the year the Bakersfield power building has been remodeled according to the ideas advanced in our 1926 sales program. In that program it was shown that the most desirable arrangement, both from a merchandising point of view and from the utility's standpoint was that in which the power company's consumers' counter and cashier's desk are located within the walls of the retail store.

In the Bakersfield change, the consumers' counter and the cashier's desk were placed in the rear of the store, thus bringing through that store and past the merchandise displayed therein all persons having business with the power company. The result has been a large increase in gross merchandise business.

The results of the remodeling may be set down as follows:

(1) The general appearance of the power company's building has been greatly improved.

(2) The Valley Electrical Supply Company has one of the most spacious and attractive electrical retail stores anywhere in this state.

(3) The Bakersfield public is showing increased friendliness of feeling toward the power company; this, undoubtedly due to the more cheerful and appealing surroundings in which it meets our employees.

(4) The spirit of the power company's employees has been improved and its general efficiency raised as a result of the more commodious and dignified quarters provided for their use.

The gross sales during the months of April, May and June of this year, as compared with the same months during the preceding year showed an increase of 147 per cent. This demonstrates, perhaps, better than any other single instance the value of such a set-up over the efforts of the power company alone.

Portable fair booth, which can be knocked down to transport to each of the many fairs in the San Joaquin Valley.

Fair Booth

One of the advertising features which we have found to bring surprisingly good results has been the portable booth designed to be set up at each of the numerous county fairs held during the summer in the San Joaquin Valley. The Valley Electrical Supply Company built the portable demonstration booth as provided in its 1926 sales contract. Using this booth as a center for our displays we intend to exhibit and demonstrate electrical appliances extensively at all county and local fairs which, in our opinion, will warrant the expenditure.

Two charts made up by the power company's

TABLE III

COMPARISON OF ESTIMATED AND ACTUAL SALES OF HEAVY DUTY APPLIANCES FOR THE FIRST SIX MONTHS OF THE YEAR 1926

Items	Sales			Kw. Put on Lines			Estimated Yearly Revenue			Sales Cost		
	Estimated	Actual	*Under*	Estimated	Actual	Over	On Quota	On Sales	Over	Estimated	Actual	Over
Ranges	506	457	*49*	3036	3146.7	110.7	$48576.00	$50347.20	$1771.20	$15422.88	$15985.24	$ 562.36
Water Heaters	400	385	*15*	1600	1678.9	78.9	25600.00	26862.40	1262.40	8128.00	8528.81	400.81
Air Heaters	210	123	*87*	420	469.0	49.0	6720.00	7504.00	784.00	2133.60	2382.52	248.92
Other H. D. Appl.	150	136	*14*	300	555.8	255.8	4800.00	8892.80	4092.80	1524.00	2823.46	1299.46
TOTAL	1266	1101	*165*	5356	5850.4	494.4	85696.00	93606.40	7910.40	27208.48	29720.03	2511.55

6 months sales of heavy duty appliances ..... 5850.4 kw.
6 months quota of heavy duty appliances ..... 5356.0 kw.

Sold over quota ..... 494.4 kw.
6 months estimated revenue on sales $93606.40
6 months estimated revenue on quota 85696.00

Estimated revenue over quota ..... $ 7910.40
Estimated kw. quota for 12 months 10,800.00
Estimated revenue for 12 months on this quota $172,800.00

Estimated yearly revenue on heavy duty appliances sold these six months $93606.40
Sales cost to power company 29720.03
or: 31.75% of one year's revenue.

Estimated 5 years' revenue on heavy duty appliances sold these six months $468032.00
Sales cost to power company 29720.03
or: 6.35% of 5 years' revenue.

rate and contract division, showing the kilowatt-hour consumption per domestic consumer per year during the years 1917 to and including 1926 tell an interesting story. The 1926 consumption has been computed on the basis of the actual use during the first six months of the year.

The lower curve on Fig. 1 shows the number of kilowatt-hours used per domestic consumer for lighting and small appliances only. The drop indicates the year 1924, when there was a dry year and the economic conditions of the San Joaquin Valley were depressed. The years 1925 and 1926 show an upward trend, the expectation being that at the end of the current year the consumption will have increased to a point above that of 1923.

In our opinion, this increase is partly due to the large number of lamp socket devices which we have placed on the power company's lines during these last two years—in 1926 we will have placed by this campaign alone 20,000 appliances among 50,000 consumers—also to our work in educating the public to a more frequent use of these appliances and of those already in their possession. We feel we have taken numbers of domestic appliances from sideboards and out of closets and put them into daily and gainful use.

The curve on Fig. 2 shows the kilowatt hours used per domestic consumer for heating and cooking. The drop in 1922 was caused by the fact that automatic water heaters were sold on the idea of leaving them on the line continuously. However, this policy was changed and the resultant manual operation of the heaters caused a drop in consumption. This curve shows a decided improvement for the current year. This increase may be partially accounted for by our success in selling additional equipment, such as water heaters and air heaters, to those consumers already possessing electrical ranges. And also to the frequent visits made by our demonstrator to all domestic users of heavy duty appliances.

The demonstrator has found in numerous cases that due to one or two discouraging failures, the range oven was no longer being used; this resulting, of course, in loss of revenue to the power company. In such cases we make it a point to demonstrate the use of the oven to the consumer in her own home, even going to the extent of cooking an entire meal in her presence.

About thirty days after this first call, our demonstrator again visits the consumer and in a majority of cases finds the oven being used daily by a thoroughly satisfied housewife.

In line with these conditions and in conclusion it is only necessary to point out the importance of this work to the power company.

It would be possible of course to sell these appliances at a profit—that is, to sell a smaller volume and perhaps make a showing of profit on straight-away merchandising. But there would be less load-building value in such a method, and the power company's interest is primarily in putting kilowatts on the lines. The power company is interested also in maintaining favorable and friendly relations with the dealers, which under the policy now prevailing we are able to do. The sales expense to the power company may seem disproportionate for a single year. But we are figuring over a number of years and the permanent value of such work to the power company. On a five years' basis, it is apparent that the sales cost is low. We believe our estimates are conservative, in fact below the actual results that will be achieved. The work of demonstrators and the following up of appliance sales to educate the housewife to further use of them is, in our opinion, bound to result in increased consumption and in consequence additional revenue to the power company. Our work does not cease with putting the appliance into the home. We keep in touch with the purchaser and promote and encourage to as great an extent as possible more general use of the appliances.

TABLE II

COMPARISON OF ESTIMATED AND ACTUAL SALES OF LAMP SOCKET APPLIANCES FOR THE FIRST SIX MONTHS OF THE YEAR 1926

Items	Sales			Kw. Put on Lines			Estimated Yearly Revenue			Sales Cost		
	Estimated	Actual	Over *Under*	Estimated	Actual	Over *Under*	On Quota	On Sales	Over *Under*	Estimated	Actual	Over *Under*
Cookers	2050	2558	508	820.00	1024.50	204.50	$8200.00	$10245.00	$2045.00	$3001.20	$3749.67	$ 748.47
Toasters	1070	929	*141*	588.50	510.95	*77.55*	5885.00	5109.50	*775.50*	2153.91	1870.08	*283.83*
Air Heaters	125	90	*35*	75.00	66.44	*8.56*	750.00	664.40	*85.60*	274.50	243.17	*31.33*
Waffle Irons	1080	1602	522	712.80	1051.33	388.53	7128.00	10513.30	3385.30	2608.85	3847.85	1239.00
Flatirons	425	686	261	255.00	394.65	139.65	2550.00	3946.50	1396.50	933.30	1444.42	511.12
Fans	500	590	90	30.00	38.28	8.28	300.00	382.80	82.80	109.80	140.10	30.30
Table stoves	250	105	*145*	165.00	63.00	*102.00*	1650.00	630.00	*1020.00*	603.90	230.58	*373.32*
Heat pads	30	63	33	1.80	3.78	1.98	18.00	37.80	19.80	6.59	13.83	7.24
Vac. Sweepers	170	176	6	25.50	26.40	.90	255.00	264.00	9.00	93.33	96.62	3.29
Sold. irons	60	24	*36*	12.00	4.80	*7.20*	120.00	48.00	*72.00*	43.92	17.57	*26.35*
Battery chargers	..	22	22	..	2.20	2.20	..	22.00	22.00	....	8.05	8.05
Percolators	1150	1060	*90*	460.00	444.08	*15.92*	4600.00	4440.80	*159.20*	1683.60	1625.33	*58.27*
Miscellaneous	340	530	190	47.60	74.34	26.74	476.00	743.40	267.40	174.22	272.08	97.86
TOTALS	7250	8435	1185	3193.20	3704.80	511.60	$31932.00	$37048.00	$5116.00	$11687.12	$13559.35	$1872.23

6 months sales of lamp socket appliances ..... 3704.8 kw.
6 months quota of lamp socket appliances ..... 3193.2 kw.

Sold over quota ..... 511.6 kw.
6 months estimated revenue on sales $37048.00
6 months estimated revenue on quota 31932.00

Estimated revenue over quota ..... $ 5116.00
Estimated kw. quota for 12 months 8500.00
Estimated yearly revenue on this quota $85000.00

Yearly revenue on lamp socket appliances sold these 6 months $37048.00
Sales cost to power company 13559.57
or 36.6% of one year's revenue.

5 years' revenue on above appliances $185540.00
Sales cost to power company 13559.57
or 7.32% of 5 years' revenue.

Field for Industrial Electric Heating in the Pacific Coast States

By E. J. Cipperly

Industrial Heating Specialist, General Electric Company, Los Angeles

CONTRARY to general opinion there is a definite field for industrial electric heating in the Pacific Coast territory, notably installations of a small character. This field, together with a plan for cultivating it by the central station, is discussed in this article by a man who is thoroughly familiar with industrial heating and its problems.

ALMOST without bounds is the field of industrial electric heating, for applications may be made in virtually every shop, factory and industrial plant throughout the country. There is hardly a manufactured article that is not subject to some heating operation during process of production and in many instances the operation is best performed by the use of electricity.

Possible applications are too numerous and varied to permit complete tabulation here, yet even the following brief description of certain applications that have been in use for several years is sufficient to impress one with the fact that electric heating has gained a permanent place in industry and is an economic factor impossible to overlook.

On the Pacific Coast electricity is employed in the steel industry for a great many purposes; in the glass industry for the annealing process and in the baking industry for the baking of bread and cakes.

In the firing of vitreous enamel on bath tubs and other bathroom fixtures—also on household ranges both gas and electric types—electric heat produces ware that is superior in every way to enamel fired by other fuels.

The melting of babbitt for electric motors is distinctively an electric application while in the jobbing foundries where iron and steel are melted and where cores are baked, electric heat is accomplishing highly desirable results.

Then, in the creameries and dairies small electric steam boilers are quite generally used and in the printing industry in connection with typesetting machines and stereotype pots, electric heat for a number of years has proved successful.

In the many furniture factories of this section electrically heated glue pots are employed to some extent but the advantages of glue pots electrically operated are so marked that universal application ought to be made.

Practically every machine shop should have at least one tool room furnace, and garages and electrical repair shops are an excellent market for electrically heated compound melting pots. Also it should be noted that in all sheet metal shops electrically heated soldering irons should be used in place of the gas fired soldering irons. In the railroad shops electric heat is used most satisfactorily for baking armatures and for melting babbitt. Electric heat for the coloring of citrus fruit, the drying of walnuts and the germination of seeds represents other important applications.

In the manufacture of steel, for the many purposes which it is used today, we find the electric arc-melting furnace almost a standard tool in the industry. We then come to the various stages through which steel must pass before it becomes usable material, namely, annealing, hardening, drawing and carburizing. Many successful applications of electric heat during these different stages of production have been made in the past five years. Figs. 1, 2 and 3 show typical installations.

Modern industry constantly seeks to improve the quality of its products and electric heat renders powerful aid to this end. Not only is the product always improved through the use of electric heat but the cost of manufacture frequently is reduced although the saving is not necessarily in the heating process itself but rather in the **overall** cost of production.

By way of illustration, the experience of an automobile manufacturer may be cited. He reports a saving of from three to six cents on each gear treated with electric heat, although the unit cost for energy is three-fourths of a cent higher than for other fuel. The overall economy lies in the reduction of scaling and in the consequent saving of labor formerly required to clean the gears. Another manufacturer has found that electricity, costing 1 cent to heat a single part, saves 2½ cents on labor.

When treated with electric heat, gears are stronger, bath tubs smoother, lenses clearer, bottles less likely to break, copper wire more ductile, and sheet brass uniformly soft and free from scale—all the result of even heat, perfectly controlled and accurately adjustable throughout any required range of temperature—advantages that are certain to be secured only where electricity is used.

Many fender plants on the Pacific Coast are equipped with electric ovens and several of the best equipped electric fender enameling shops in the country are located in Los Angeles. An installation in one of the shops is shown in Fig. 5.

A complete electric foundry, using electricity for melting, baking of cores and heat treating of the

steel parts, located in Los Angeles, has been in operation for three years.

These installations are cited to show a few of the more important well established uses of electricity.

The industrial heating line in general consists of small self-contained devices such as soldering irons, glue pots, solder and babbitt melting pots and tool

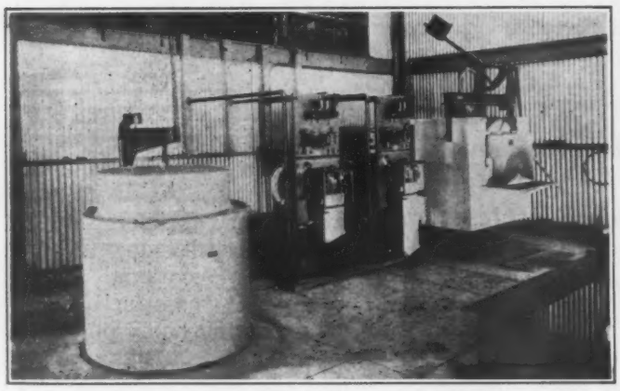


Fig. 1. Heat treating room for oil-well tools, Emsco Tool Company, Los Angeles

room furnaces, and many kinds of heating units suitable for the great variety of process machines and heaters and control equipment for industrial ovens.

For larger furnaces, complete electrical equipment, together with suitable automatic control panel and temperature control instruments are available. The electric resistor furnace for various applications can be obtained in sizes as small as 5 kw. to those large enough to accommodate the entire casting of a large turbine housing or a 300,000-lb. gun forging. Such furnaces have been built with connected load from 700 kw. to 2,700 kw.

The use of electric heating in the glass industry is reasonably developed and here there are many possible applications. Figs. 6 and 7 show typical installations of electric glass annealing lehrs.

In the electrical industry are many applications of electric heat for ovens used to bake armatures. A typical installation is shown in Fig. 9. A bank of babbitt melting pots for rebabbitting bearings is shown in Fig. 10.

Numerous installations of electric heating units in stereotype pots have recently been made. Fig. 4 shows an application of electricity made on an existing pot without materially changing the equipment, thus converting a gas fired stereotype pot to an electrically heated one, bringing the central station a revenue running into thousands of dollars each year that formerly went elsewhere. With this

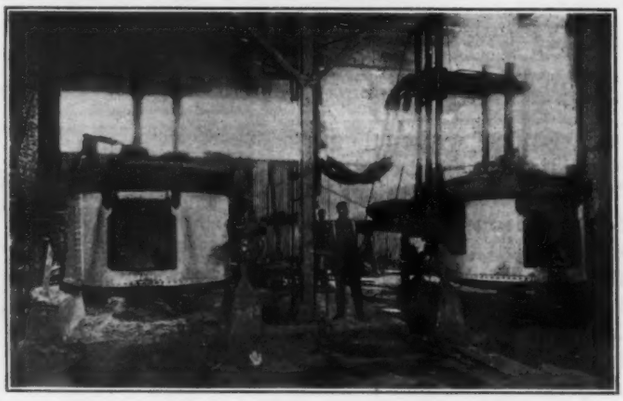


Fig. 3. Typical steel melting furnace installation, Alloy Steel & Metals Company, Los Angeles

type of installation, the heating elements are immersed directly into the bath of metal and the temperature control is automatic, giving the same temperature metal at all hours of the day. The installed capacity is sufficient so that when a considerable amount of cold metal is put in the bath, the pot is ready for operation in a few minutes. The automatic control immediately turns on the electricity when the metal is chilled from adding the cold metal and the temperature of the metal is brought back to normal in a short time.

The central station, like all other business enterprises, should be seeking new fields of endeavor, for, as with other enterprises, the future of its growth is dependent upon developing new uses for its product, in other words, methods for increasing its load.

The potential business in connection with industrial electric heating is almost unlimited as the field extends into practically every branch of industry. Nearly every central station has many industries in its district from which a very small revenue is received. With the installation of industrial heating appliances in these industries, the revenue can be

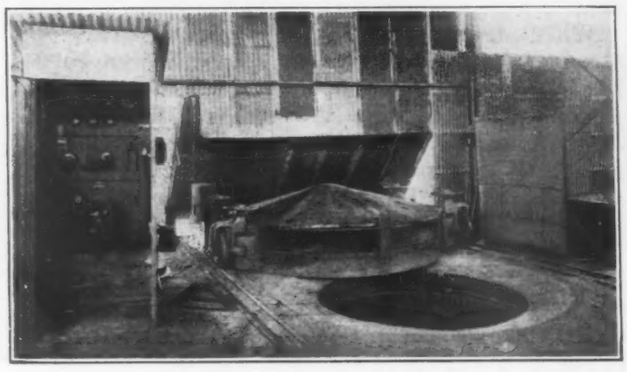


Fig. 2. Direct heat, vertical cylindrical furnace operating at 1,800 deg. F., Alloy Steel & Metals Company, Los Angeles

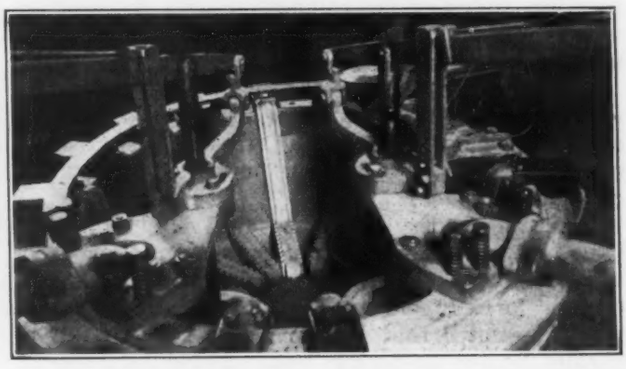


Fig. 4. Five-ton electric stereotype melting pot of the type used in newspaper plants

increased many times, usually without a very large investment on the part of the central station.

The following are typical installations from which central stations are deriving revenues of $200 to $1,200 a month and formerly these processes of heating were carried on by various other fuels,

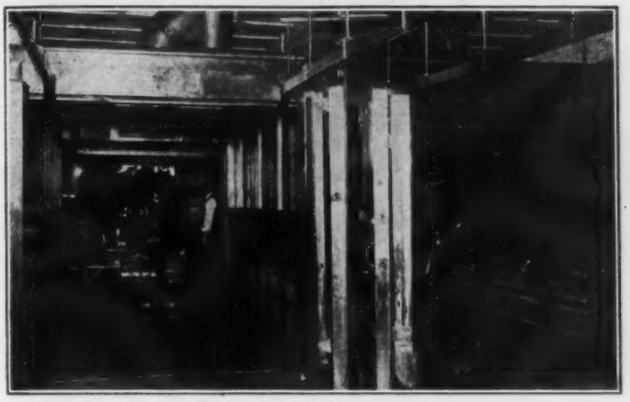


Fig. 5. Enameling oven for baking fenders.

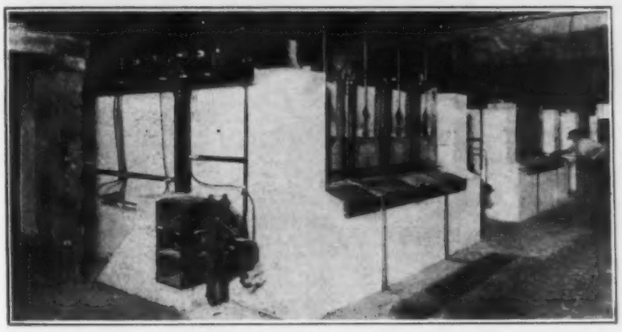


Fig. 6. Front view of electric lehrs or glass annealing furnaces, Illinois Pacific Glass Company, San Francisco

especially on the Pacific Coast where gas and oil are considered the customary products to be used in heating.

The Alloy Steel & Metals Company, which uses electricity for melting steel, formerly used gas and oil for its core baking and heat treating. About two years ago, this concern installed an electric core baking oven and heat treating furnace having a total connected load of 300 kw. This equipment is in daily operation, sometimes 24 hr. per day, and it will readily be seen from this that the load is very desirable from a load factor standpoint and a power factor standpoint. Figs. 2, 3 and 8 show the melt furnace, core bake oven and heat-treating furnace.

Fig. 1 shows an installation of two electric furnaces at the plant of the Emsco Derrick & Equipment Company, Los Angeles, Calif. The total consumption of these furnaces is about 35 kw. per hour and when operating 24 hr. per day and 30 days per month, a revenue is obtained when electricity is sold at 2 cents per kw-hr. of about $6,000 per year. Heretofore, this money now spent for electricity was used to purchase gas or oil.

Figs. 4 and 5 show installations of glass annealing lehrs at the Illinois Pacific Glass Company, San Francisco, 1,500 kw. being installed in this service, which means that a very high monthly revenue is now obtained from the application that formerly was carried on either by gas or oil.

Fig. 9 shows a two-chamber semi-continuous type conveyor oven installed at the Los Angeles Railway Company's plant. Here is a connected load of 70 kw. which operates at practically a 100 per cent load factor. Baking is carried on in periods of 24 hr.

The installation shown in Fig. 10 is at the plant of the Los Angeles Railway Company. It consists of three high temperature babbitt melting pots with automatic control features and a preheating oven, electrically heated for preheating the bearing shells before rebabbitting. In addition to this, a 6-kw. installation of immersion heaters is used for heating water and fluids for removing the grease from the bearings before melting out the old babbitt. Here again is an installation of 60 kw. for doing work that was previously accomplished by use of gas.

The desirability of the industrial heating load should interest the power companies to the extent that they should have an industrial heating department retaining the services of a trained heating specialist fully informed on manufacturing processes, in connection with heat treating, foundry practice, baking, drying, annealing of glass, steel manufacture and baking of food stuffs, especially bread. This specialist should also be informed in connection with the melting of the lower melting alloys, including babbitt metal for bearings, die casting metals and solder.

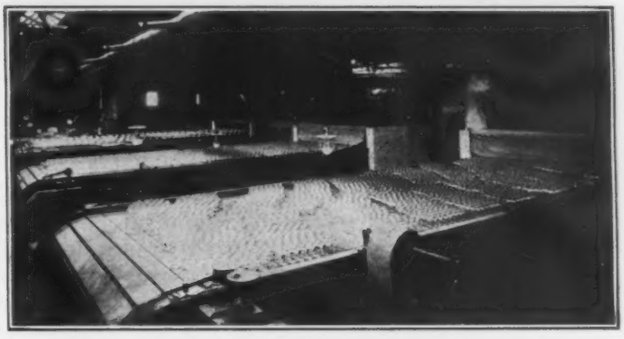


Fig. 7. Rear view of glass annealing furnaces.

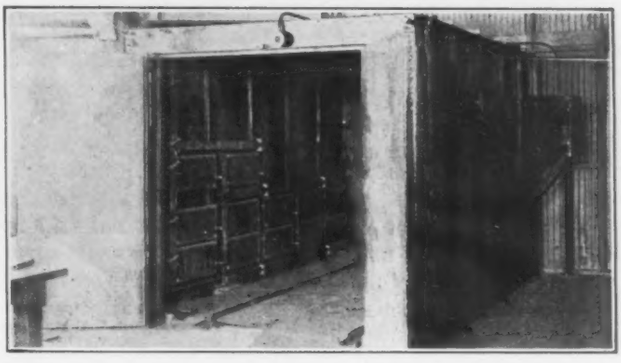


Fig. 8. Box-type core baking oven, Alloy Steel & Metals Company, Los Angeles

Since there is no longer any doubt that electric heating in industry has gained a permanent place as an economic factor, why is it that the central station does not have men in its organization fully informed on this subject so that customers could be assisted in planning applications? Considerable harm may be done by wrong applications through the sale of heating equipment as a result of promotion and advertising without engineering advice, and, therefore, the central station should have an industrial heating engineer familiar with all types of industrial electrical heating equipment, who should be in a position to make decisions regarding the true economic value of the particular equipment for the particular job.

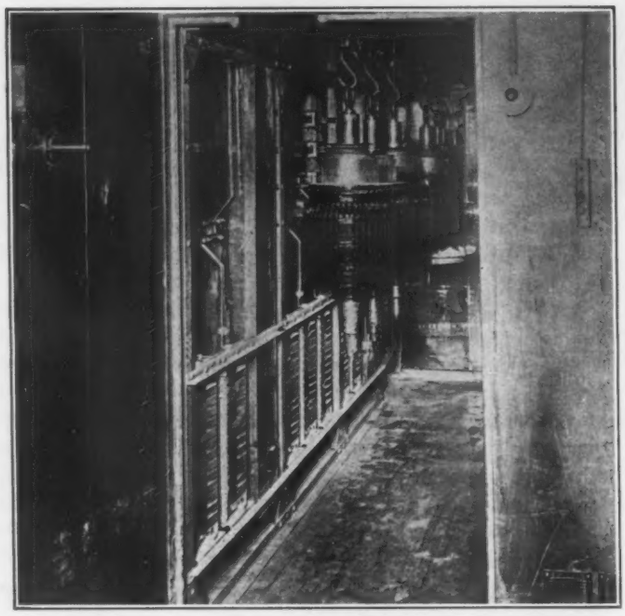


Fig. 9. Thirty-foot section of two-chamber semi-continuous type conveyor oven for baking railway motor armatures, Los Angeles Railway Company.

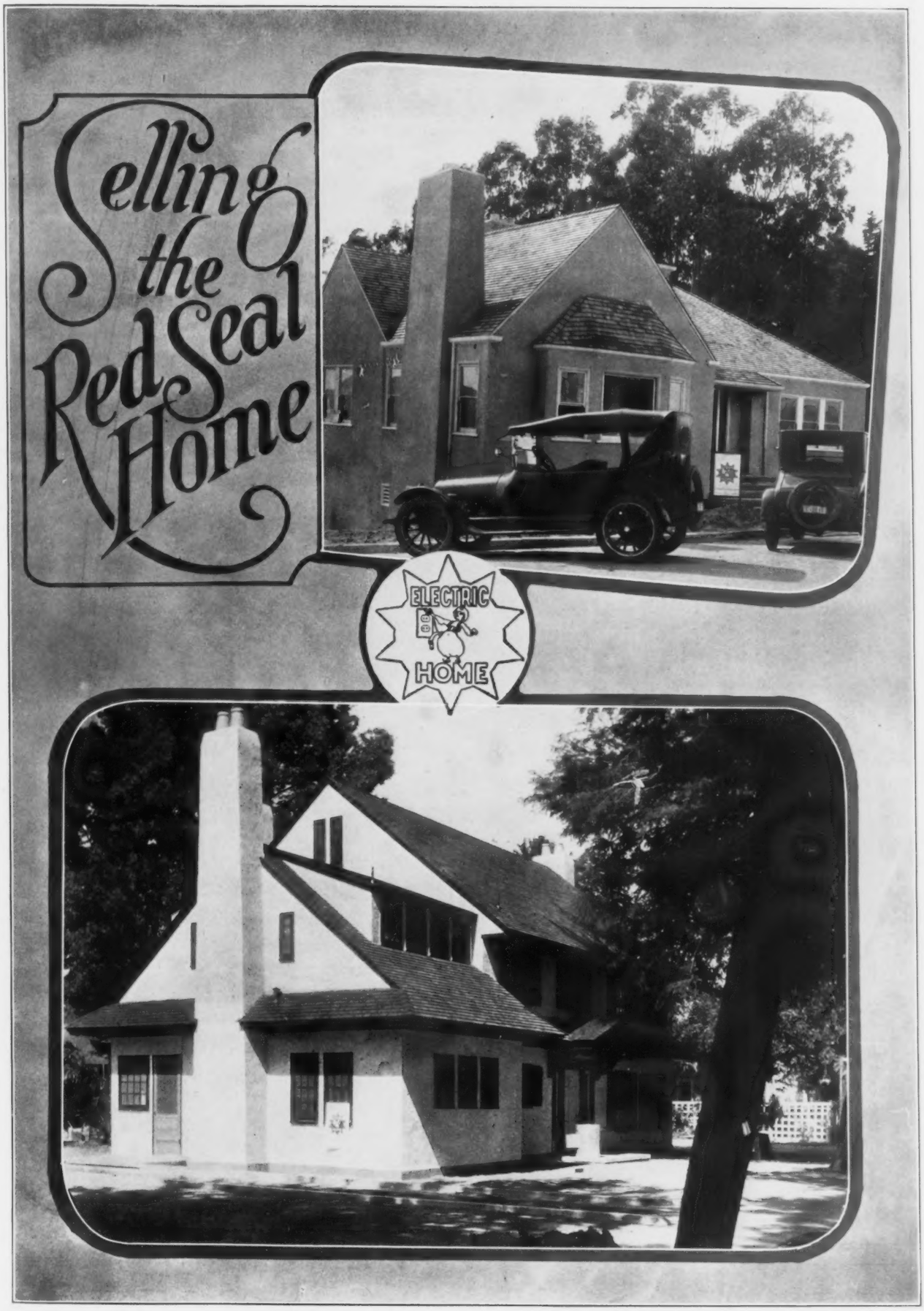
When improper applications are made, it is not only a loss to the customer, but the central station as well for it has incurred an expense of running lines, hanging transformers and setting meters. As surely as improper installations are made, the cost of operation and every unsatisfactory condition will become apparent to the user and the equipment dispensed with, which will mean that the central station will find it necessary to take down transformers and not only lose the revenue which it had hoped to make, but have an excessive amount of distribution equipment on its hands. The central station should have an industrial heating engineer for its own protection as well as for the customer's benefit. After an improper application, a customer probably would be skeptical of electric heating for some time and it might take many months of effort to convince him that any of his propositions could be handled successfully with electric heat.

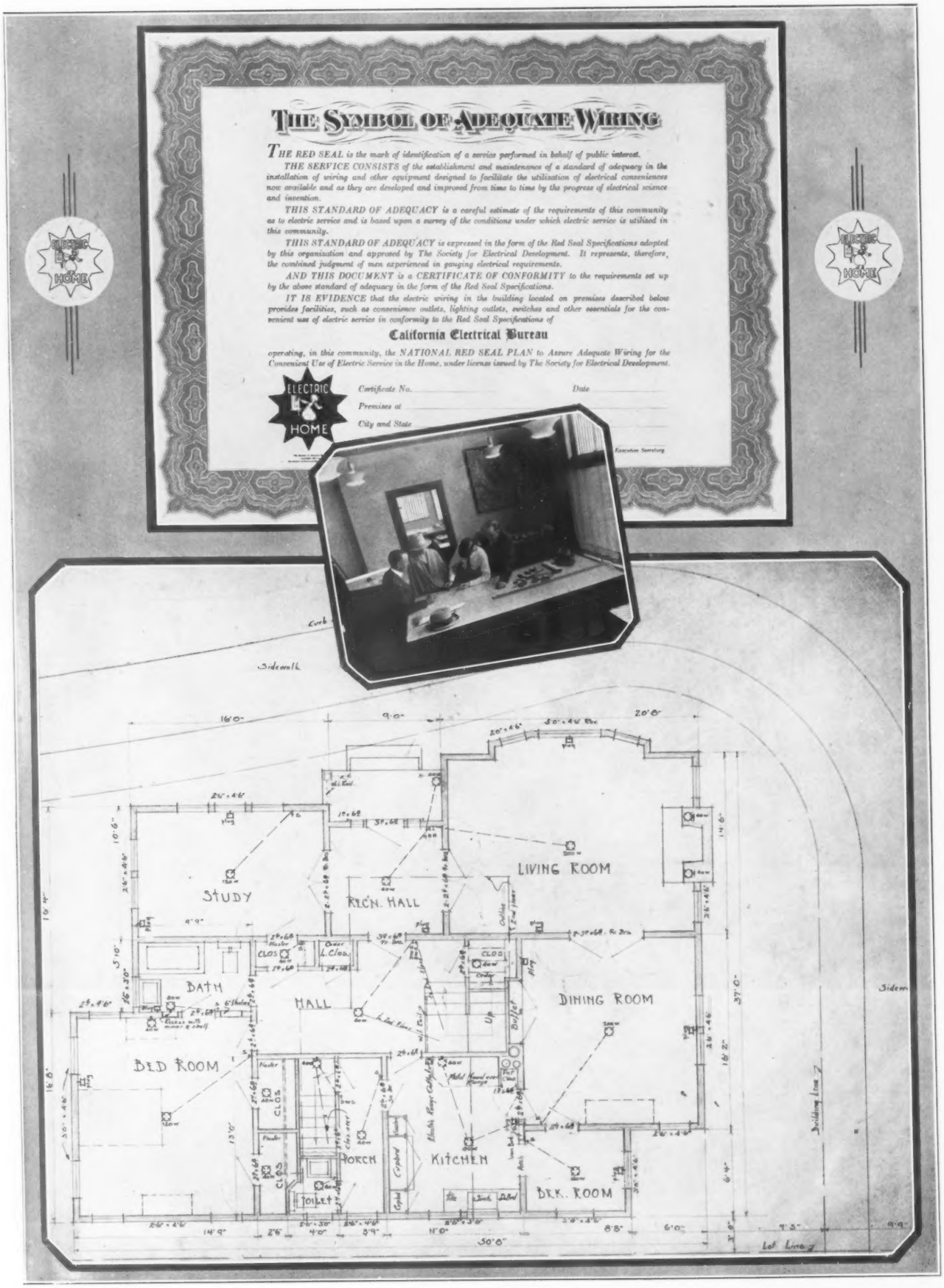
Many central stations, including those which are combination companies selling gas as well as electricity, are using their own internal magazines to create an electrical heating consciousness in their own organizations and moreover have trained heating specialists in their organizations who are in a position to analyze each problem as it comes to them and determine exactly whether or not it is desirable business, and a feasible application for electricity. Numbers of men for this service have been trained at Eastern factories or have attended some of the industrial heating schools held under the auspices of the National Electric Light Association. These schools are held yearly and each central station should embrace the opportunity and have one or more of its men attend this school to become familiar with the application of electricity for heating.

When speaking of the Pacific Coast as a field for electric heating, the tendency in most minds is to think of a section having very cheap fuel in the way of oil and gas, in view of which it is interesting to note that the rapid increase in the use of electric furnaces for so many purposes in preference to fuel fire types of all kinds may be given in two words: **overall economy.** Perhaps in a good many cases the actual cost of energy for operating an electric furnace is higher than corresponding fuel fired type, but the benefits derived in the way of the quantity and quality of finished products in most cases counterbalance the difference in cost. After all, what is most important is the total cost of the finished product, not in the comparative B.t.u. in a given amount of fuel.

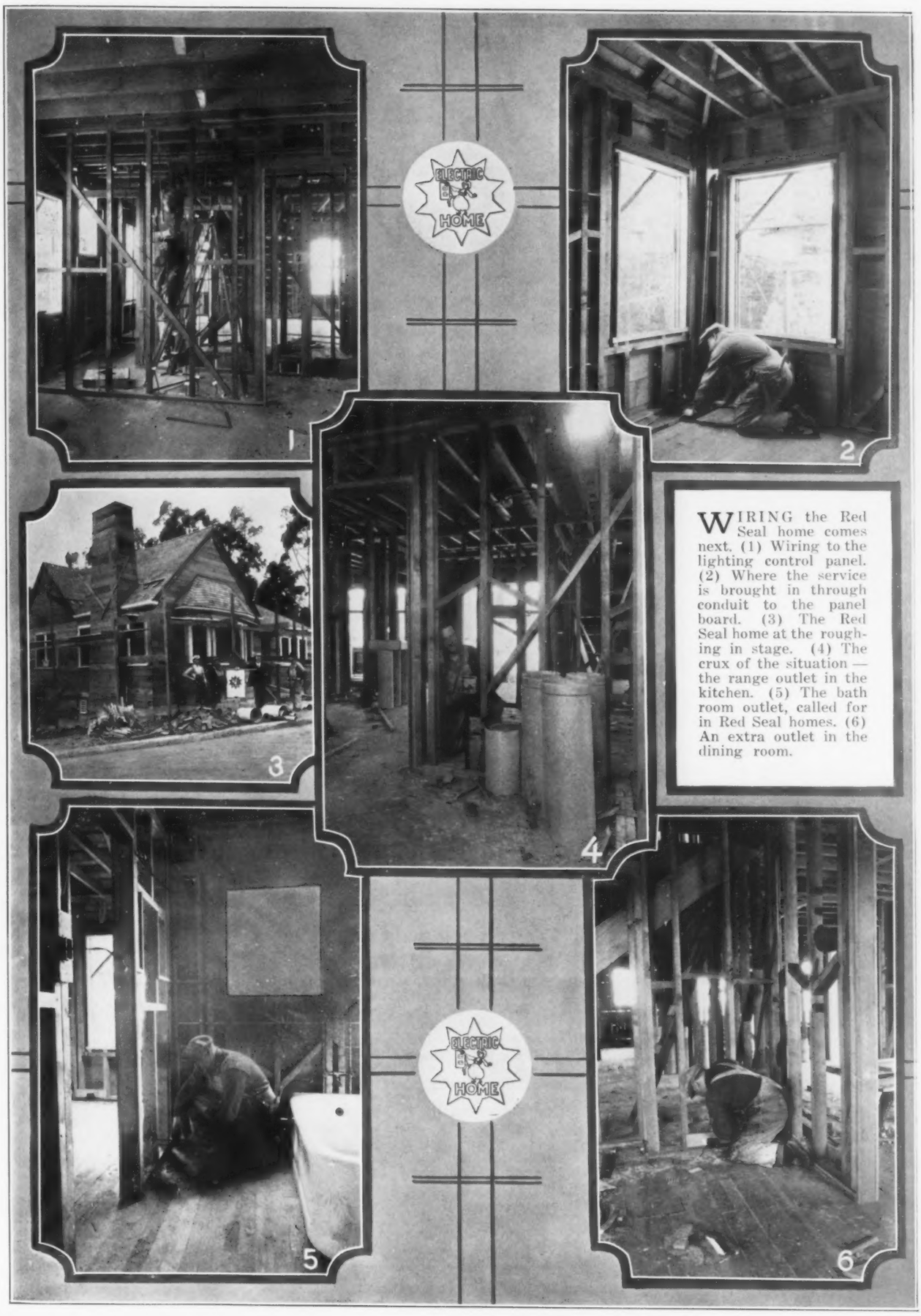
Recently there has been distributed to the new business departments of all the central stations on the Pacific Coast, a complete treatise on electric heating. This treatise was distributed under the auspices of the Pacific Coast Electrical Association, and contains full information concerning a great many applications on the Pacific Coast and in the East, with complete data on each installation giving names of customers. Also contained in the treatise is full information relative to catalogs of the various manufacturers. With the information and help given to the central stations by the Pacific Coast Electrical Association and manufacturers, it behooves each company to have in its organization a trained heating specialist to guide and help customers in the proper application of electricity for heating.

Fig. 10. Electric babbitt-melting pots in rebabbitting bearings, Los Angeles Railway Company.

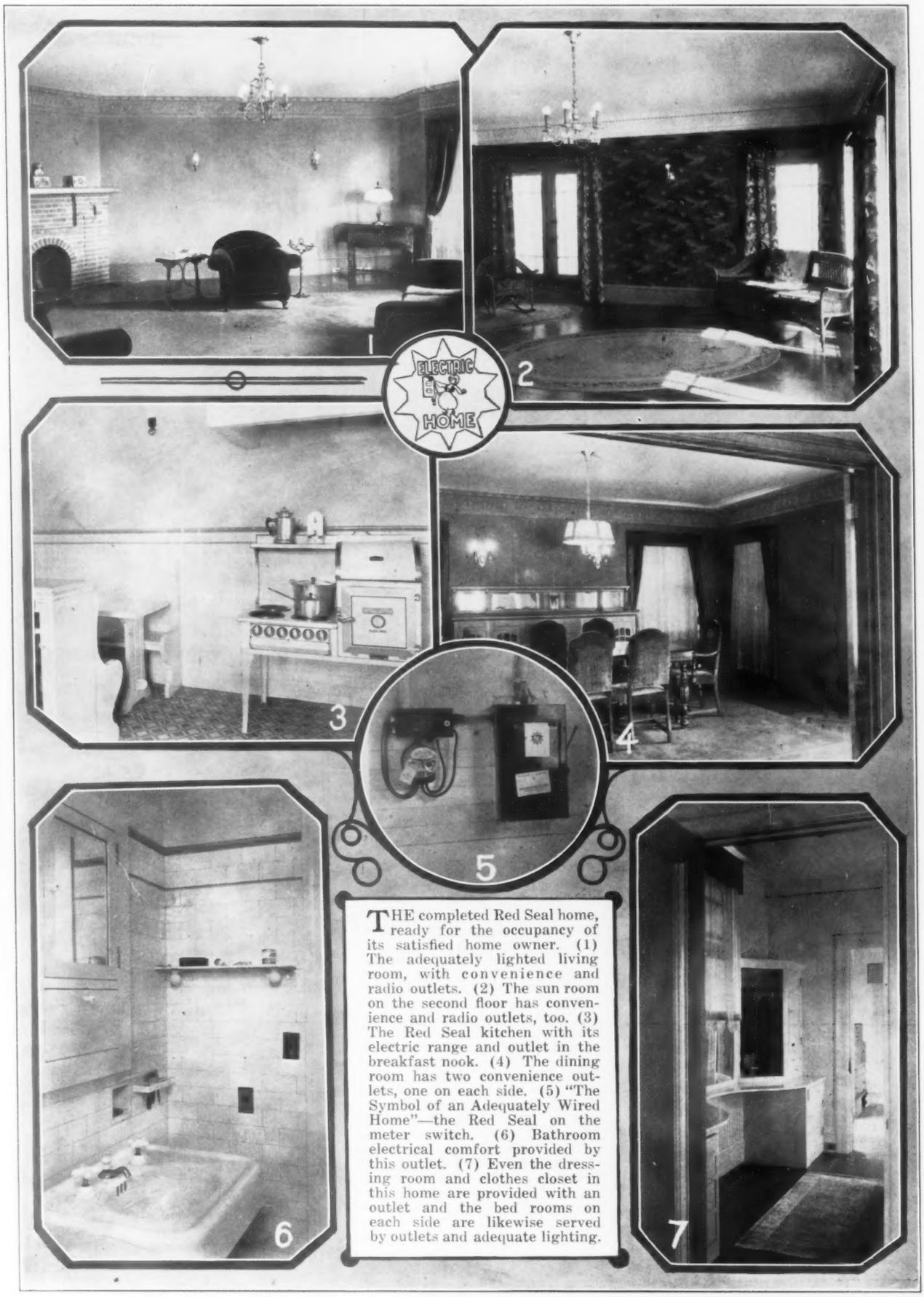

Selling the Red Seal Home
ELECTRIC
HOME


THE SYMBOL OF ADEQUATE WIRING
THE RED SEAL is the mark of identification of a service performed in behalf of public interest.
THE SERVICE CONSISTS of the establishment and maintenance of a standard of adequacy in the installation of wiring and other equipment designed to facilitate the utilization of electrical conveniences now available and as they are developed and improved from time to time by the progress of electrical science and invention.
THIS STANDARD OF ADEQUACY is a careful estimate of the requirements of this community as to electric service and is based upon a survey of the conditions under which electric service is utilized in this community.
THIS STANDARD OF ADEQUACY is expressed in the form of the Red Seal Specifications adopted by this organization and approved by The Society for Electrical Development. It represents, therefore, the combined judgment of men experienced in gauging electrical requirements.
AND THIS DOCUMENT is a CERTIFICATE OF CONFORMITY to the requirements set up by the above standard of adequacy in the form of the Red Seal Specifications.
IT IS EVIDENCE that the electric wiring in the building located on premises described below provides facilities, such as convenience outlets, lighting outlets, switches and other essentials for the convenient use of electric service in conformity to the Red Seal Specifications of
California Electrical Bureau
operating, in this community, the NATIONAL RED SEAL PLAN to Assure Adequate Wiring for the Convenient Use of Electric Service in the Home, under license issued by The Society for Electrical Development.
ELECTRIC HOME
Certificate No.
Date
Premises at
City and State
Executive Secretary
ELECTRIC HOME
ELECTRIC HOME
Curb
Sidewalk
STUDY
RECN. HALL
LIVING ROOM
BATH
HALL
DINING ROOM
BED ROOM
PORCH
KITCHEN
BED. ROOM
TOILET
Building Line
Lot Line

Mrs. Homeowner meets with her architect, the electrical contractor, and the representative of the California Electrical Bureau to lay out plans which will entitle her home to the Red Seal certificate shown above.



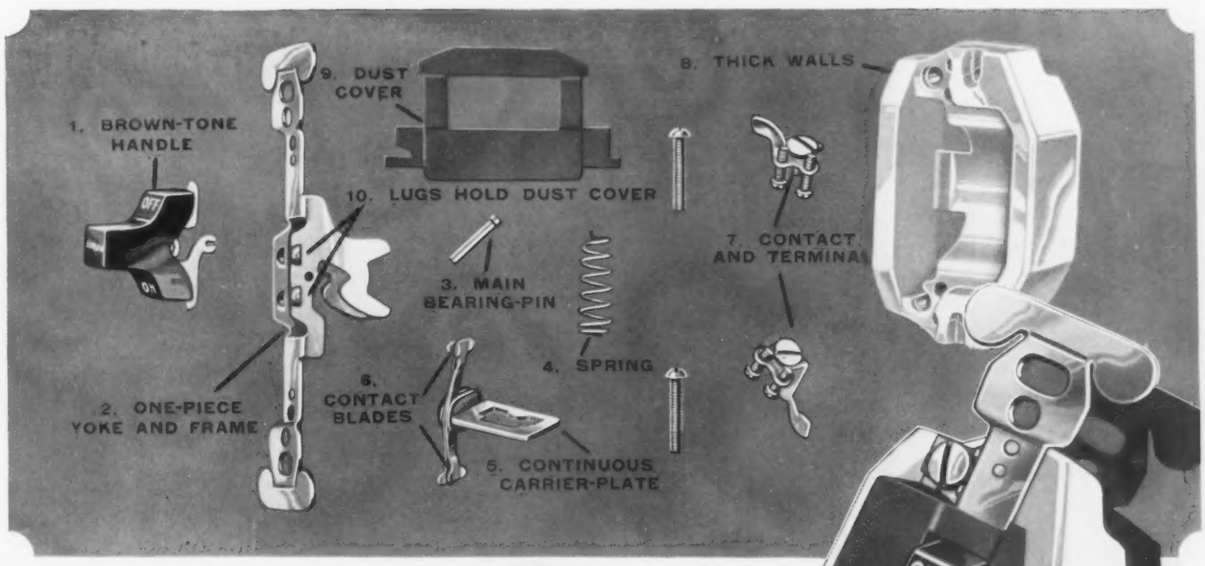
WIRING the Red Seal home comes next. (1) Wiring to the lighting control panel. (2) Where the service is brought in through conduit to the panel board. (3) The Red Seal home at the roughing in stage. (4) The crux of the situation — the range outlet in the kitchen. (5) The bath room outlet, called for in Red Seal homes. (6) An extra outlet in the dining room.



THE completed Red Seal home, ready for the occupancy of its satisfied home owner. (1) The adequately lighted living room, with convenience and radio outlets. (2) The sun room on the second floor has convenience and radio outlets, too. (3) The Red Seal kitchen with its electric range and outlet in the breakfast nook. (4) The dining room has two convenience outlets, one on each side. (5) "The Symbol of an Adequately Wired Home"—the Red Seal on the meter switch. (6) Bathroom electrical comfort provided by this outlet. (7) Even the dressing room and clothes closet in this home are provided with an outlet and the bed rooms on each side are likewise served by outlets and adequate lighting.

MODEST homes are these, but none the less Red Seal. The Red Seal specifications are adaptable to any home built, from finest mansion to humblest cottage. On this page are a group of modest homes, the homes which, because without servants, need Red Seal convenience the most. (1) A convenient kitchen, with its electric range side by side with the kitchen cabinet. A convenience outlet above the range provides still greater possibilities. Photographs 2, 3, 4, 5 and 7 are of homes in various parts of the West. (6) Shows the latest electrical servant, the electrical refrigerator on the service porch of a Red Seal home.

MANSIONS, too, may be Red Seal homes. Grouped on this page are photographs of more lavish Red Seal homes throughout the West. That shown in Fig. 2 was originally planned to have 60 outlets, but now will have 204 to provide Red Seal adequacy. Fig. 5 shows a row of Red Seal homes being built in one of the newer tracts in San Francisco. Several such tracts are being planned in various parts of the West.



ARROW HEAD SWITCHES

An Achievement in Simplicity

No. 6444 Single Pole
No. 6445 Double Pole
No. 6446 Three Point
No. 6447 Four Point

Features

1. Brown-tone handle matches either brass or molded plates. Direct kick-off and positive indication.
2. Combination yoke and frame, one piece. Eliminates parts. Plaster ears position switch and save installation time.
3. Main bearing-pin permanently fastened when assembled.
4. Self-supporting spring for long life and smooth action.
5. Continuous carrier plate. Always in alignment.
6. Contact blades of heavy bronze clamped to assure perfect contact.
7. One-piece contact and terminal held in positive position by two screws.
8. Thick walls prevent breakage.
9. Dust cover, securely fastened by lugs on frame, protects the mechanism.

Tear Here

We are interested. Please send a new **Arrow-Head Switch.**

A New Development

ARROW

The complete line of Wiring Devices

THE ARROW ELECTRIC COMPANY HARTFORD, CONNECTICUT

FLUSH H&H SWITCHES

NUTMEG
"4401" Shallow Push

TUMBLER
"8601" ~ Square

Competitive priced

Their Long Life *Saves the Life of Competitive-price Wiring Jobs*

FRIENDLY Switches — they back you up when you're up against the low-bid jobs. Help you in keeping down to a price without cutting down the permanence of your work.

NUTMEG "Push" you know of old; its low price has never denied you dependable *mechanism*. Its sturdiness, through the years, has been priceless.

For your newer needs in a *Tumbler:*—8601 Square; sister switch to NUTMEG. Like NUTMEG it stands at the head of its price-class, because it stands out from that class mechanically.

These switches couldn't help but share the craftsmanship in the H&H higher-priced jobs. So share it all you can in your *own* jobs.

THE HART & HEGEMAN MFG. CO. HARTFORD, CONN.
Makers of Electric Switches since 1891

Red Seal-*the Symbol of Adequate Wiring*

Bryant-*the name of superior wiring devices*

a combination that means Satisfied Customers and

SATISFACTORY PROFITS!

The Red Seal Specification is a welcome guide to home builder and architect in securing ADEQUATE wiring and outlet circuits throughout the house. Such specifications bring a new era of convenience to the user of electricity. The quality of this service is another matter. That depends largely upon the quality of the wiring devices that tap the circuits.

For nearly forty years the Bryant Electric Company has been building sockets, convenience outlets, switches and other wiring devices. Over four thousand different wiring devices are now made under the Bryant label and guarantee.

A little timely effort on the part of the electrical contractor with the architect or the home builder can assure a bigger business volume and more profits. Bigger business through recommending a three-way switch in the entry hall perhaps, double convenience outlets instead of single, additional outlets in the living room if you learn the furnishing scheme, and a Bullseye Switch plate for the basement stairs. Better business when you recommend the Bryant Superior Line of Wiring Devices. They will assure satisfaction from the wiring installation both to you and to the architect or home owner.

BRYANT the Complete Line of Electric Wiring Devices

BRYANT SUPERIOR WIRING DEVICES (Reg. U. S. Pat. Off.)

THE BRYANT ELECTRIC COMPANY

1421 State Street, Bridgeport, Conn.

BRYANT SUPERIOR WIRING DEVICES (Reg. U. S. Pat. Off.)

Chicago
844 W. Adams St.

San Francisco
149 New Montgomery St.

New York
342 Madison St.

The largest Plant in the world devoted exclusively to the manufacture of Electric Wiring Devices

The Hubbell Tassel Pendant adds a new note of distinction to Hubbell Pull Sockets.

Standard Key

Electrolier Push

Standard Keyless

Electrolier Key

Electrolier Keyless

Electrolier Keyless-Short

That "subtle something"

"I never look at a Hubbell Product without sensing a subtle something about it that takes it out of the commonplace."

The man who made the above remark gave us something to think about. For that "subtle something" is a real something that we insist must go into all Hubbell Products and that we want everybody to understand.

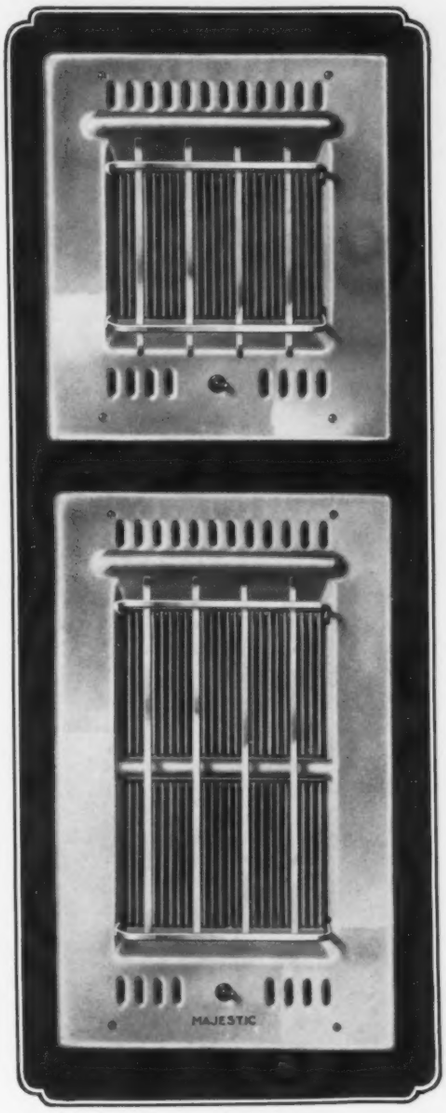
It is:—*perfection in every detail.*

Hubbell Products reflect the working policy that animates our entire organization. And Hubbell Sockets are not an exception.

HARVEY HUBBELL INC
ELECTRICAL SPECIALTIES
BRIDGEPORT, CONNECTICUT, U.S.A.
NEW YORK, N.Y. CHICAGO, ILL.

Pacific Coast Representative:
GARNETT YOUNG AND COMPANY
San Francisco Los Angeles Seattle Portland

HUBBELL *Brass Shell Sockets*



Every bathroom, new or old, is your field for this

New MAJESTIC

Electric BATHROOM HEATER

Everyone in the electrical industry knows that a tremendous field exists for a built-in bathroom heater that is efficient, practical and inexpensive. The new MAJESTIC exactly meets these requirements.

Finished in white vitreous enamel and presents an exceptionally pleasing appearance. Will not catch dust or dirt. The element is not affected by water that may be splashed on it while in operation.

Made in 1000 watt and 2000 watt capacities, as illustrated. 1000 watt heater, $25; 2000 watt heater $30.

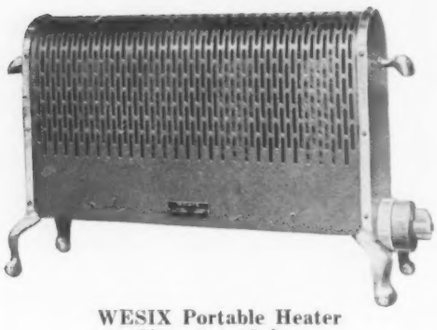
Majestic products include a complete line of heavy duty heaters, both built-in and portable types, for homes, apartments, hotels and office buildings. Every Majestic Heater is scientifically correct in design and built to give a lifetime of practical, efficient service. Write for catalog.

MAJESTIC ELECTRIC APPLIANCE CO.
INCORPORATED

San Francisco Kansas City Philadelphia

WESIX

——unmistakably the BEST!

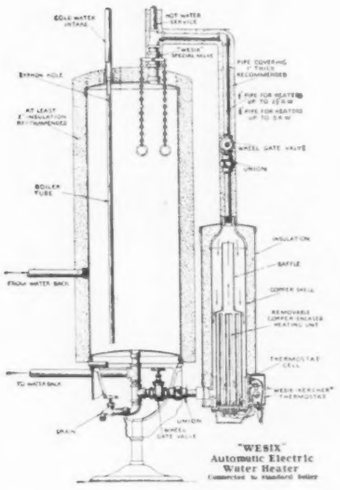


WESIX Portable Heater
Sizes 1 to 7 kw.

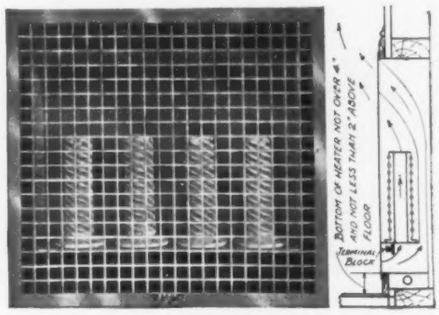
When you sell Wesix Air and Water Heaters you keep all of the profits. For Wesix Electric Heaters do what is claimed for them—economically and dependably. They stay sold without periodical service calls that eat into your profits.

Unmistakably the Best, is a recommendation you can safely make for Wesix Electric Heaters. The best—for delivering a roomful or houseful of heat or an abundant supply of 160 degree water. The best, from the standpoint of proven scientific design.

If you encounter any difficult heating problems, get in touch with us. Our heating specialists are at your service. They can supply you with definite operating cost data on electric heating with Wesix Electric Heaters for hundreds of Western installations.



WESIX Three-Gallon Type Automatic Water Heater connected to ordinary boiler showing Wesix Patented System for controlling or limiting the amount of water kept hot.



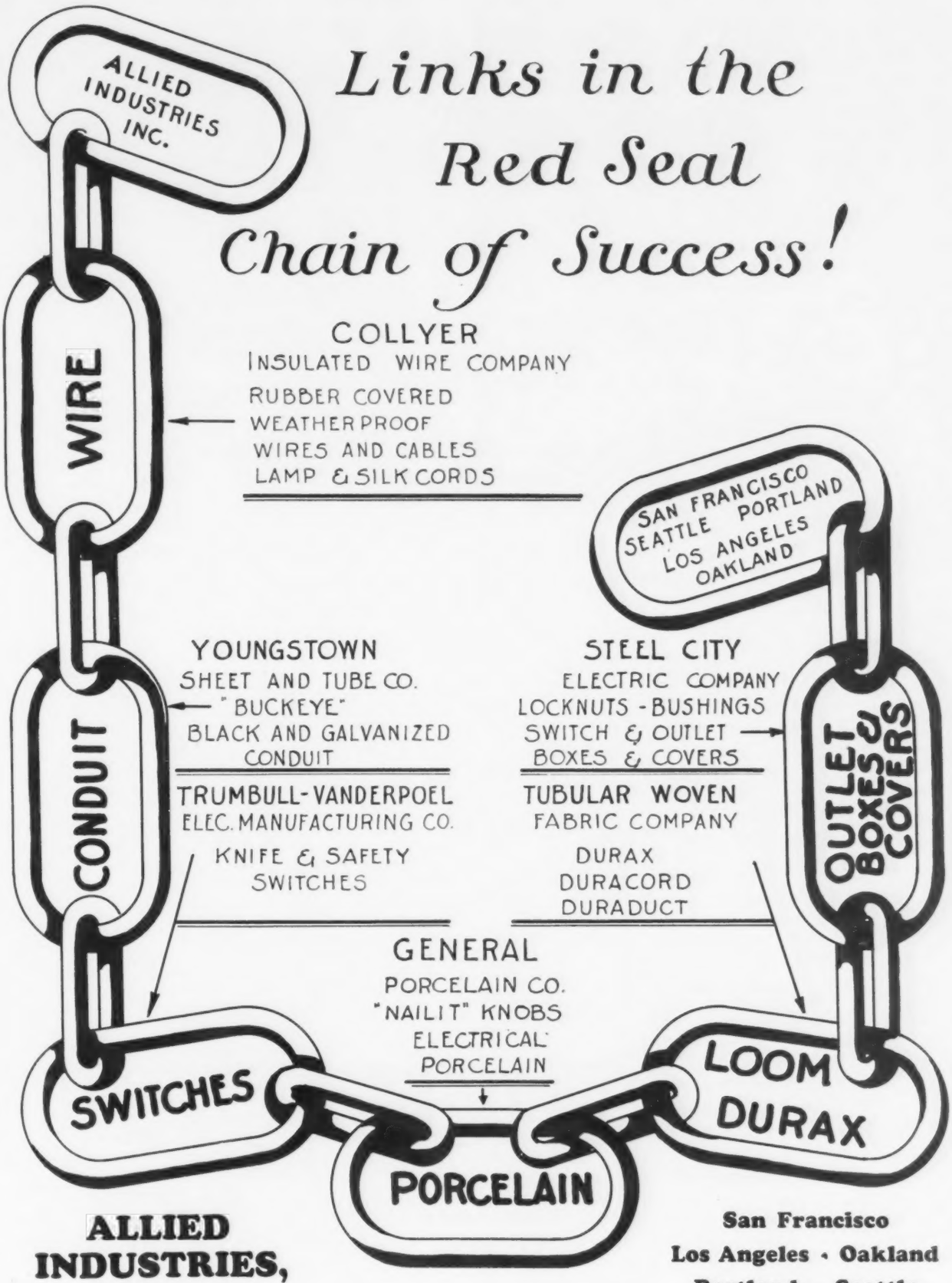
WESIX Radiant-Convection Wall or Fireplace Type (Patented)

Write for Literature and Prices

SANDOVAL SALES CO.

115 Jessie St.
San Francisco

4536 Hollywood Blvd.
Los Angeles



ALLIED INDUSTRIES,
Incorporated

San Francisco
Los Angeles · Oakland
Portland · Seattle

"In Unity There Is Strength"

This is evident by the fact that there were 522 Red Seal homes built in California during the past seven months. A greater number by far than ever before.

The Red Seal Plan

Provides a program whereby all branches of the electrical industry will co-operate for the good of each and all concerned. We're off with a wonderful start. Let everybody do his part.

More Red Seal Homes—

The P. G. and E. is lending financial assistance, enlists 10,500 employees, arranges window displays, runs ads in newspapers in presenting the Red Seal idea to 2,000,000 people in the territory served.

PACIFIC GAS AND ELECTRIC COMPANY

P·G·and E·

"PACIFIC SERVICE"

SAN JOAQUIN POWER

Seventy-two Red Seal Homes for the Garden of the Sun!

ELECTRICITY'S emblem of complete efficiency has won its place in the Valley of the San Joaquin. The Red Seal of approval is upon seventy-two homes.

To every contractor and dealer, to every architect, to every home-builder, we are telling the story of the Red Seal and its guarantee of adequate wiring. Our employees are missionaries of the gospel of the Red Seal.

This Valley is called "The Garden of the Sun," where life is pleasant and homes speak always of happiness and contentment. Happiest of all homes are those that are "Red Seal Specified" and most contented of all home owners are those who, under the Red Seal, know the daily joy of thorough electrical convenience.

San Joaquin Light & Power Corporation

Fresno, Calif.

A. G. Wishon, President

A. Emory Wishon, Vice-President and General Manager

The Red Seal Plan

Has Opened the Door to Greater Home Comfort and Convenience

The ever growing number of Red Seal homes in California proclaims the popularity of the Plan, and as building activity increases there is a wider field in which to spread the message of "home comfort and convenience." The organization of Great Western Power Company of California is co-operating in the united movement of the electrical industry to bring before the public the advantages of adequate electric wiring in every home. Intelligent effort is bringing success to the RED SEAL PLAN.

GREAT WESTERN POWER COMPANY

OF CALIFORNIA

Is the Red Seal Plan Expensive?

No!

the trouble is in our own minds

If we have not been completely successful in selling "Red Seal" it is on account of mental hazards. Because we have been accustomed to selling $50.00 jobs we go out with the idea that nobody wants a $200 job. That is wrong.

CONSIDER THIS

A Complete Red Seal installation costs less than a medium-priced closed car.
An electric range plus an electrical refrigerator costs less than a good piano.
A washing machine costs less than a living room rug.
A vacuum cleaner costs less than a phonograph.
A full set of small appliances costs less than an overcoat.
A convenience outlet costs less than a hat.
Current to operate them all for a month costs less than a dozen golf balls.

YET

People buy cars, pianos, rugs, phonographs, overcoats, hats and golf balls by the thousand—they buy them almost automatically—BECAUSE they are convinced that these things are essential.

WE MUST FEEL THAT THE RED SEAL IS ESSENTIAL

We must get over the mental hazard that people cannot afford a complete electrical installation, that electrical appliances are expensive to purchase and expensive to operate. THEY ARE NOT!

THE ELECTRICAL DOLLAR BUYS MORE IN CONVENIENCE AND SERVICE THAN ANY OTHER DOLLAR THAT THE CUSTOMER SPENDS

People want "Red Seal." They are just waiting to be informed. It is up to all of us in the Electrical Industry to tell them—
and sell them

Southern California Edison Company

Merchandising Kilowatt-Hours in a Commercial Lighting Campaign

By V. H. Moon

Appliance Sales Superintendent, Pacific Power & Light Company, Portland

ALTHOUGH commercial lighting is a field that has been given considerable attention the campaign of the Pacific Power & Light Company described by the author is unique in many respects. Because the installations have been in for almost a year the author is able to offer some concrete data as to the effect on kilowatt-hour sales resulting from the sales efforts of the power company salesmen and contractor-dealers who participated in the campaign.

BEHIND the slogan "Profit with Light—Pay with Profits," the Pacific Power & Light Company went into a commercial lighting campaign which proved to be one of the most productive revenue building campaigns ever conducted by the company. The campaign was conceived in the belief that standards of commercial lighting throughout the small towns served by the company were far below what they should be; that these standards could be improved by offering the business men of the communities a simple plan for adequately lighting their places of business at reasonable expense; that this plan could be sold to the merchants on a business basis, that is, that it would produce business for them; that the sale of any appreciable increase in lighting load in stores would yield a material amount of revenue without adding a proportionate increase in investment necessary to serve it; and that if this revenue could be secured without too great a new business cost it would be extremely profitable to the company.

Of course, other and less tangible considerations entered into the conception of the campaign, touching its public relations and business relations aspects. It was thought that the business men of the towns would welcome the company's effort to give them good lighting advice, and that improvement in store illumination in the town would be applauded by the people at large as a civic asset. Furthermore, through securing the co-operation of the electrical dealers of the communities, the relations between the company and this class of business men could be improved.

Planning the Campaign and Estimating Results

To reduce campaign expense of all kinds, it was determined to offer only one unit which would be adaptable to average conditions in most stores. The unit chosen was the 16-in. Trojan Glass of the Ivanhoe Regent Company, suspended on a bronze hanger of pleasing design made by the Miller Company. This unit could be used with either a 300-watt or 500-watt lamp according to spacing and conditions. To simplify the work of the salesmen, certain standards were established for minimum requirements. Two watts of lamp capacity per square foot of floor space were recommended, which meant that if the units were spaced 12 ft. apart a 300-watt lamp should be used, and if 15 ft. apart, a 500-watt lamp. A minimum distance from the floor of 10½ ft. was recommended for hanging height. Ordinarily the new fixtures would be hung in the same locations as the old fixtures to save the customer all the expense possible, but in stores where this was impracticable a rewiring job would be recommended, and such job would be turned over to a contractor-dealer thus helping interest these men in the campaign.

It was considered that 70 per cent of the stores on the company's system was inadequately lighted, and that, therefore, this represented the total possible number of prospects. Estimating that a certain percentage of these could be sold, and that the average installation would be four fixtures, a figure was arrived at as a possible goal to reach in the campaign. Again cutting this number, to be conservative, a quota of 1,000 units was established and apportioned amongst the fifteen districts in the proportion that the number of commercial customers in each bore to the total. Further estimates of average wattage increase, average hours use of the increase, and average rate on which this would be used, led to the estimate of $7,200 increase in annual revenue from the installation of 1,000 units. Experience of other companies in campaigns of this kind, however, showed that approximately as many similar units were sold by the power company and dealers in the six months following the campaign as were sold during the campaign period, and if this ratio should be approached in the situation under consideration, this estimated revenue increase could be materially raised. It seemed reasonble to set the net results of a successful campaign at $14,000 gain in revenue.

It was planned to use ten extra salesmen since the work was to proceed concurrently with another appliance campaign on which the regular salesmen would be engaged. The men available for the work had had no experience selling lighting, and so it was deemed necessary to give them some instruction before starting them out. Consequently a

week was set aside for a short course in lighting standards and practices, in selling illumination, and in company policies. Assistance in conducting this school was secured from A. T. Bergeron, Ivanhoe Regent Company, and E. M. Kerr, Pacific States Electric Company, Portland.

Another essential preliminary was to make available for display model stores, where the kind of lighting recommended to the prospects could be shown as a sample of what we were trying to sell. To accomplish this the company offered to one merchant in each town, without obligation on his part, to install in his establishment the kind of installation recommended, with the understanding that if at the end of the campaign period the merchant desired to leave it in he would pay the cost of it on the regular campaign basis. If on the other hand he chose not to buy the fixtures, they would be removed and his old ones installed without cost to him. Obviously the district managers picked carefully their prospects for this model installation, so that each developed into a sale as well as proving a valuable aid to the salesmen during the campaign.

Solicitation, Advertising, Dealer Co-operation

With ten men working in teams of two per district, it meant that the campaign could start in five districts simultaneously. These teams were required to solicit all the business houses in the district, turning in on special forms a survey of the situation as it was found in the store at the time of the solicitation and a report on whether a sale was made. During the solicitation representatives of the Ivanhoe Regent Company, Pacific States Electric Company and Edison Lamp Works circulated through the districts giving aid to the salesmen on particular jobs where it might be needed. When a district had been worked over, the team working it moved on to another, but returned to the first later in the campaign to close as many as possible of the remaining prospects. The campaign started Oct. 13, 1925, and was completed Dec. 16.

As an added stimulus to salesmen, who were paid a salary, $250 in prizes was offered. This sum was divided into five $50 prizes, each to be given to a team of two salesmen. Three were offered for the greatest number of fixtures sold by a team during different periods of the campaign, one for the entire campaign period, and one for the team selling the highest percentage of quota in any district. This division made it possible for more than one team to participate in the prize money and kept interest alive to the end.

The advertising was timed to precede the solicitation in each district by only a few days. Three broadsides were prepared for mailing to prospects at intervals of two days, with the last timed to reach the merchant two days prior to the salesman's call. The first of these, a large green folder, was entitled, "Why not employ tongue-tied clerks? You could probably hire them for less." It opened first to a page of large type urging that good light will help sell more goods. The inside was printed in smaller type, but still three times as large as ordinary typewriting, in the form of a letter in which the thoughts on the outside and the first inside pages were elaborated. The second was the same size as the first, printed on red, and brought out the thought that "More people buy by sight than are induced to buy by argument." The third, in yellow and black on white, was headed, "A Sensational Offer to Business Men," and contained a picture of the fixture offered and a complete explanation of the offer, featuring the slogan quoted at the head of this article. Only two newspaper ads were used: one just before the campaign opened in each town as an announcement, and one run about a week before the campaign was to close, urging the merchants to take advantage of the offer and printing the names of those that had done so up to the date of the advertisement.

The fixtures were offered to customers completely installed with the proper size lamp at $12 cash or $13 on terms of $1 per unit down and $1 per unit per month. If any wiring had to be done to secure the best spacing, the company turned this business over to one of the contractor-dealers of the town, recognizing the preference of the customer, added the amount of the wiring plus 10 per cent to the amount of the fixture bill, and carried the account for one year at equal monthly payments. In such cases the company paid the dealer in cash on completion of the job the amount of his contract. Thus a considerable amount of wiring was created for the dealers, and in addition to this means of securing co-operation from them, the company furnished them with a stock of the same fixtures sold by the company, urging them to make sales on their own accounts, for which they were allowed $3.50 per fixture sold and installed. Where a dealer made the installation of fixtures sold by the company he received $1 per fixture. Further, the company carried the accounts of all jobs sold by the dealers on time, paying the dealers their cash commissions on completion of the installation. This policy resulted in securing satisfactory co-operation from most dealers as is evidenced by the fact that dealers were credited with 31 per cent of all the fixtures sold during the campaign period.

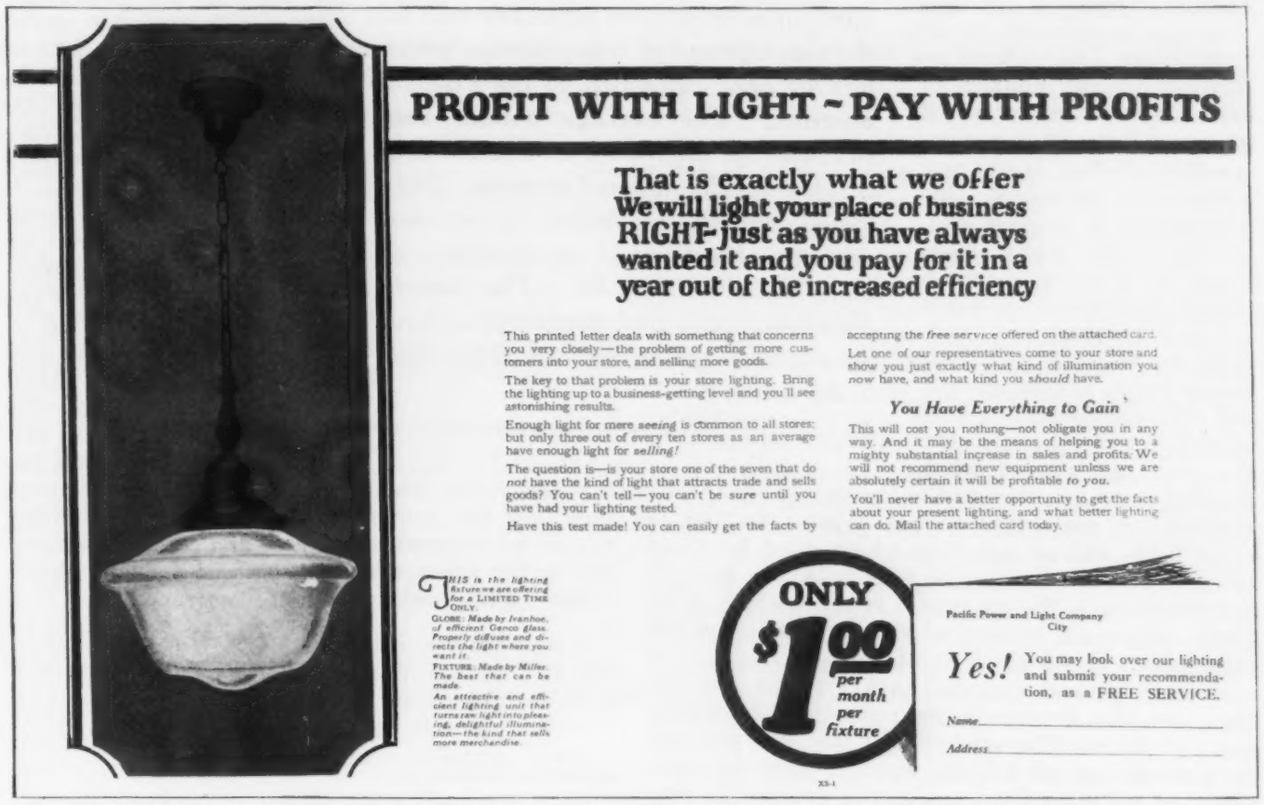
Results

It was realized in planning the campaign that in merchandising fixtures the company could not expect a profit, that is, that the expense of selling 1,000 or more fixtures would be greater than the gross receipts from the sale. But it must be remembered that the intent was to sell kilowatt-hours, and consequently, the test of the success of the campaign would be in determining what was the cost of securing the revenue added. There were actually sold during the campaign 1,374 units, adding 235.61 kw. net additional load. The cost of the campaign over and above receipts from the sale of fixtures was $3,369.54, representing $14.27 per kw. added. Using the same multiplying factor for the number of hours use during the year, as was applied to the estimate at the commencement of the campaign, this would mean the consumption of

283,000 kw-hr. Applying to this consumption, then, the average rate per kw-hr. received for this class of business, we get the expected additional annual revenue, and find it to be well worth the expense incurred in securing it.

By checking up to see how close actual results will approximate estimated ones, a record has been kept of the 65 customers in one town sold during the campaign. These customers bought 260 units adding 31.9 kw. to their total load. The campaign ended in this town about meter-reading time, December, 1925. Thus a comparison of 1926 consumption and revenue of these 65 customers, with the consumption and revenue of the same customers in 1925, will give a fairly accurate measure of average results from the campaign. It is interesting to record, therefore, that for the first eight months of 1926 these customers have been billed for 154,497 kw-hr. as against 118,387 kw-hr. for the first eight months of 1925. The increase, therefore, up to the month of September, is 36,110 kw-hr., and since the last four months of the year are the months in which occurs the heaviest use of lighting, it is reasonable to suppose that the increase for the entire year will approach 56,000 kw-hr., and that the additional revenue received from this business will be ten times as great as the cost of the campaign in this town.

If, then, an increase of 56,000 kw-hr. annually is secured from adding 31.9 kw. of lighting load in one district, by the simple rule of three we may expect 412,000 kw-hr. from adding 235.61 kw. over the entire system. Even though there prove to be influences in other districts which will tend to bring the total increase below 412,000 kw-hr. as figured from the situation in the test town, nevertheless it is not likely to be less than 283,000 kw-hr. as estimated, and, therefore, it would seem that early estimates were sufficiently conservative and that actual increased revenue will greatly exceed expectations. Furthermore, the impetus given to better store lighting has become apparent through the fact that other merchants have improved the lighting in their establishments since the campaign and so we are able to add to the direct revenue an indirect one not so easy to figure but none the less certain. When to these considerations is added the intangible benefit to public relations, it must be assumed that the campaign was highly successful and amply justified its cost.


PROFIT WITH LIGHT ~ PAY WITH PROFITS
That is exactly what we offer
We will light your place of business RIGHT- just as you have always wanted it and you pay for it in a year out of the increased efficiency
This printed letter deals with something that concerns you very closely—the problem of getting more customers into your store, and selling more goods.
The key to that problem is your store lighting. Bring the lighting up to a business-getting level and you'll see astonishing results.
Enough light for mere seeing is common to all stores: but only three out of every ten stores as an average have enough light for selling!
The question is—is your store one of the seven that do not have the kind of light that attracts trade and sells goods? You can't tell—you can't be sure until you have had your lighting tested.
Have this test made! You can easily get the facts by accepting the free service offered on the attached card.
Let one of our representatives come to your store and show you just exactly what kind of illumination you now have, and what kind you should have.
You Have Everything to Gain
This will cost you nothing—not obligate you in any way. And it may be the means of helping you to a mighty substantial increase in sales and profits. We will not recommend new equipment unless we are absolutely certain it will be profitable to you.
You'll never have a better opportunity to get the facts about your present lighting, and what better lighting can do. Mail the attached card today.
THIS is the lighting fixture we are offering for a LIMITED TIME ONLY.
GLOBE: Made by Ivanhoe, of efficient Cenco glass. Properly diffuses and directs the light where you want it.
FIXTURE: Made by Miller. The best that can be made.
An attractive and efficient lighting unit that turns raw light into pleasing, delightful illumination—the kind that sells more merchandise.
ONLY $1.00 per month per fixture
Pacific Power and Light Company
City
Yes! You may look over our lighting and submit your recommendation, as a FREE SERVICE.
Name
Address
XS-1

Contents of one of the three broadsides sent out during the commercial lighting campaign of the Pacific Power & Light Company.

A Memorial to George Westinghouse is to be erected in Schenley Park, Pittsburgh. The theme of the commemorative work is planned to be the figure of an American youth standing in a parked space with his eyes fixed upon the granite medallion of Mr. Westinghouse and its flanking panels carrying figures representing, respectively, the genius of enterprise and the genius of engineering. Other panels will depict the inventor's achievements.

Commercial Possibilities of the Residential Customer

THE two million residential customers on the lines of the western power companies present an attractive field for the development of new business which has not been cultivated to the extent it deserves. The average annual consumption for all homes in this territory is less than the national average. Individual companies, however, report average annual residential consumptions of more than 500 kw-hr. This article discusses residential consumption and the effect of adding various appliances to the home.

CENTRAL station executives have been inclined to view with a certain degree of complacence and satisfaction an annual report which shows an increase in the number of domestic consumers served of from 8 to 12 per cent. Insofar as the Western states are concerned this percentage of increase cannot hold for many more years for the simple reason that the percentage of wired homes is reaching the maximum and the number of new homes due to normal growth will fall considerably short of this figure. Conceivably the time has arrived when thought must be given to the low return on the investment in residential service relative to that in other fields and to the steps which must be taken to cultivate the residential field with the view of deriving from it the maximum revenue which it affords. Increased residential consumption alone will bring about the desired results.

Recent national surveys have brought out the fact that the average home consumes 365 kw-hr. per year or one kilowatt-hour per day, for which it pays an average of $27.89. Furthermore the fourteen and a half million residential customers consume 9 per cent of the total energy generated by central stations and contribute 28 per cent of the total gross revenue. Obviously a very slight increase in the average annual kw-hr. consumption of the home will have a marked effect upon gross revenue and a correspondingly greater effect upon net revenue. It is apparent also that the home is not making the greatest possible use of the service which electricity offers.

The field which the home offers may be divided into three general classifications. The primary function of electricity in the home has been the furnishing of light. More and better lighting then may be set down as the first aim of a central station in dealing with its domestic consumers from a new business standpoint. The second new business possibility is in the increase in the number and variety of lamp-socket appliances. The third and last classification includes the heavy duty appliances such as the refrigerator, range, water heater and finally air heating. It is the purpose of this article to deal with the first and third classifications. The second is discussed in another article in this issue.

The fact that lighting is a requisite in the American home and the public has had to come to the central station for this service rather than to wait to be sold by the utility's commercial department, offers some explanation for the poor standard of lighting that exists in the majority of homes. It is true that little or no attention has been given by the new business departments to the lighting of the home. This is supported by the results of a survey conducted by the Home Lighting Committee of the National Electric Light Association. Several years ago this committee established a conservative ideal, representing the minimum requirements of lighting equipment to provide adequate and convenient lighting for the average home of six and one-half rooms. These requirements were as follows:

10.5	convenience outlets.
11.5	ceiling fixtures.
8	utilitarian brackets.
8.5	portable lamps.
1845	watts of connected lighting load.

Surveys based on the results of the home lighting contest show the average condition of the home to be as follows:

3.4	convenienve outlets.
8.6	ceiling fixtures.
2.5	utilitarian brackets.
2.8	portable lamps.
954	watts of connected lighting load.

Present conditions compared with conservative recommendations show that the total wattage of connected lighting load at least should be doubled; the number of convenience outlets at least should be trebled; the number of portable lamps at least should be trebled; many of the sockets should contain lamps of higher wattage.

These surveys show further that of the lamps now existing in the homes 29 per cent are smaller than 40-watt; 52 per cent smaller than 50-watt; 80 per cent smaller than 60-watt. If a campaign were to be conducted by a new business department for the purpose of increasing the wattage alone of the present lamps in the home, the average annual

gross revenue due to the replacing of smaller sizes would be increased as follows:

9 per cent if 40-watt lamps were used.
19 per cent if 50-watt lamps were used.
34 per cent if 60-watt lamps were used.

Although many merchants outside of the electrical industry have seized upon the portable lamp as a satisfactory article of merchandise, little or no attention has been paid to this device by the majority of central stations. A national survey shows that power companies that have conducted portable lamp campaigns in which a total of 115,000 lamps was sold have enjoyed an average increase of 11 per cent in the annual average gross consumption of the home. It was found that the average consumption of the portable lamp was 40 kw-hr. per year. A 200-watt portable increased the average annual consumption 18.2 per cent, or 66.5 kw-hr.

Table I.—Effect of Range on Consumption of Ten Consumers in Boise, Idaho

	Kw-hr.
Consumption ten lighting and appliance customers for 12 months prior to addition of range	6,737
Consumption for lighting and appliances only for ten consumers after addition of range	6,015
Consumption for ranges only for same ten customers	18,518
Total consumption for lights and range for ten customers for 12 months	24,533
Average annual consumption before addition of range	673.7
Average annual consumption after installation of range	2,453.3
Increase in consumption due to range	1,779.6

Table II.—Consumption and Average Revenue for Domestic Consumers in Spokane, Wash.

Year	Kw-hr. Consumed	Revenue per Year
1920	372	$19.35
1921	434	21.10
1922	462	22.80
1923	528	23.90
1924	537	25.10
1925	565	26.10

Table III.—Kw-hr. Consumption for Lightin only, Lighting and Cooking, and All Classes of Residential Consumers on Lines of Western Central Stations.

	No. of Customers			Annual Av. Kw-hr Consumption		
Year	Lighting	Dom. Pow.	Total	Lighting	Dom. Pow.	Tot. Sys.
1922	43,731	1,529	45,260	340	1,276	372
1923	47,793	1,890	49,683	340	1,263	375
1924	67,119	3,676	70,795	345	1,294	394
1925	77,925	5,436	83,361	383	1,246	439

Kitchen lighting campaigns which have been so successfully conducted by a number of central station companies have proved a desirable means of increasing residential consumption. A national survey shows that 60 per cent of ceiling fixtures in kitchens are obsolete. They contain an average of only 63 watts. Modern kitchen lighting units are readily sold with a 100-watt to 150-watt lamp. Reports to the lighting committee of the National Electric Light Association from companies which have sold a total of 500,000 kitchen units show that the average annual increase in consumption in the home is 14 per cent as a result of this installation.

These figures are further borne out by the results of a check made on the lines of several utilities of the Pacific Northwest where kitchen lighting units were sold. The results from an analysis of 100 representative residential accounts before and after the installation of the kitchen lighting units are as follows:

Average yearly consumption of 100 representative residential accounts prior to the installation of the kitchen-lighting units	256 kw-hr.
Average yearly consumption of 100 representative residential accounts after the installation of the kitchen-lighting units	323 kw-hr.
Average yearly gain	67 kw-hr.
Average yearly revenue gained at 5 cents per kw-hr.	$3.35
Average monthly consumption prior to the installation of the kitchen-lighting units	21.4 kw-hr.
Average monthly consumption after the installation of the kitchen-lighting units	27 kw-hr.
Average monthly gain	5.6 kw-hr.
Total gain	26%

From these widely scattered examples of the effect of salesmanship upon lighting of the home, it is obvious that this field offers attractive commercial rewards. These rewards are even more attractive when it is called to mind that any increase in annual gross revenue brought about by added consumption in the home for lighting is immediately reflected in an even greater percentage of increase in the net revenue. The sale of convenient, proper and adequate lighting in the home is a field not to be overlooked by new business departments.

If the problem of the light and power industry with respect to its residential consumers is one of increasing annual consumption, hence the gross net revenue and finally the return upon the investment to serve these customers, then the electric range and the electric refrigerator are two appliances which offer attractive possibilities.

Dealing first with the electric range and giving no consideration to the subjects of load factor demand and diversity factor, because these have been fully covered in the 1926 report of domestic cooking and water heating committee of the National Electric Light Association, some figures will be offered on the effect of range sales on domestic consumption and gross revenue of some of the large Western power companies where the greatest range sales activity has taken place.

Table I shows the kw-hr. consumption of ten lighting customers selected at random on the lines of the Idaho Power Company, both before and after the installation of an electric range. The increase in consumption due to the addition of the range was 1,779.6 kw-hr. per year, or 264 per cent.

Table II shows the average annual kw-hr. consumption and revenue per year for the residential accounts of the city of Spokane, as taken from the records of The Washington Water Power Company. This company has followed a consistent range merchandising policy and at the present time approximately 20 per cent of its domestic consumers are electric range users.

Table III is an analysis of residence lighting and domestic power accounts on lines of another large Western power company for the four-year period of 1922-1925. This company also has been a consistent range merchandiser. Although figures for the average consumption are higher than the na-

tional average, the gross revenue is lower on account of the considerably lower rates in effect on its system.

Developments in domestic electrical refrigeration have been so rapid that complete records of a large number of consumers on the lines of any individual company are not available. While it has been generally conceded that an electric refrigerator will bring about an increase in the average domestic consumption of from 300 to 360 kw-hr. per year, figures from the Utah Power & Light Company, as

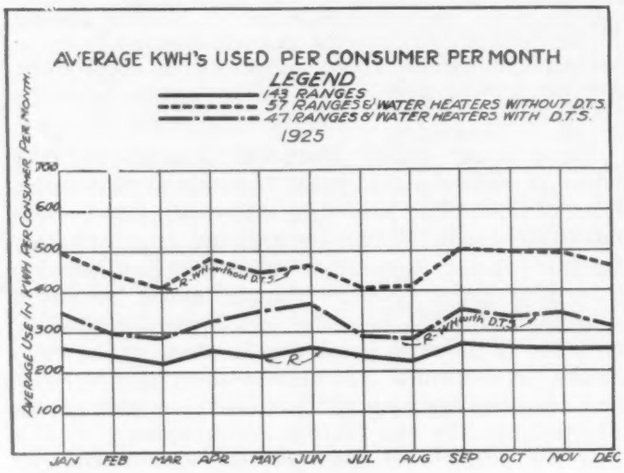


Fig. 1

shown in Table IV, indicate that this may be higher. At any rate the domestic electric refrigerator is a desirable appliance from the standpoint of increased consumption.

While there is a wide diversity of opinion as to the class of water heating service to be sold to the home, particularly with reference to the capacity of the heater, Fig. 1 is offered to show the effect of water heating upon the lines of the Western States Gas & Electric Company. The average use of kw-hr. per customer per month for ranges, ranges and water heaters on a double throw switch and ranges and water heaters without a double throw switch, is shown in this chart. The chart also indicates that from the standpoint of consumption alone, with no reference to demand, the double throw switch is not desirable as there is a marked increase where this use-limiting device is not included.

Conceivably, the maximum domestic consumption will result from the home with, first, adequate lighting, second, electrical refrigeration, and, third, range and water heater and finally, electric air heating.

Table IV shows the kw-hr. consumption in eleven homes in the city of Seattle for the year 1925 as furnished by the Electric Heating & Manufacturing Company. In this table the consumption of the water heater is not included as these are on a flat rate and the energy consumption is not metered. In installations where water heaters of an average capacity of 1 kw. are served on a flat rate the consumption will average approximately 650 kw-hr. per month unless the water heater is connected to the range with a double throw switch. In such cases the consumption will be considerably less. At any rate there exist on the Pacific Coast homes in which the average monthly consumption is in excess of 2,000 kw-hr.

Table IV.—Effect of Monthly Residential Consumption Due to Addition of Electric Refrigerator, Utah Power & Light Company

Month	No. of Customers to Get Av.	Av. Consumption Lights and Range 12 months before Installation of Refrigerator Kw-hr.	Av. Consumption Lights, Range and Refrigerator after Installation of Latter Kw-hr.	Av. Consumption of Refrigerator Alone Kw-hr.
January	27	317	382	65
February	27	267	322	55
March	27	258	308	50
April	27	259	346	87
May	27	273	301	28
June	27	266	316	50
July	15	192	278	95
August	15	180	319	139
September	18	227	310	83
October	24	269	337	68
November	27	278	372	94
December	27	291	351	60
Average		256	329	73

The examples cited in the preceding paragraphs indicate that the residential customer offers a rich field for increased consumption. With the increased sales consciousness which the industry is showing it is conceivable that considerable sales effort will be exerted for its maximum development.

Table V. Kilowatt-hour Consumption of 11 Seattle Homes Using Electricity for Cooking and Heating

House No.	110	111	112	113	114	115	116	117	118	119	120
Rooms	6	6	6	8	8	8	8	8	9	9	9
Stories	1	1	1	2	2	2	2	2	2	2	2
Registers	9	7	6	20	16	12	12	11	15	15	16
Heating Load	20	15	15	34	35	22	25	25	31	32	38
Electric Range	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Electric Water Heater	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Water Heater on Meter	No	No	No	No	No	No	No	No	No	No	No
Vacuum Sweeper	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Washing Machine	Yes	No	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Lights	26	22	28	48	136	44	50	56	46	62	40
Monthly Kilowatt-hour Consumption											
February	1,495	2,275	1,625	1,020	1,820	2,090	3,212	3,360	3,380	4,140	1,820
March	1,060	1,365	1,400	785	1,550	1,170	2,338	3,100	2,660	4,105	1,680
April	510	845	1,625	2,280	1,250	2,630	2,258	3,560	2,150	1,370	3,345
May	195	505	1,200	1,290	160	2,700	1,479	2,690	2,130	1,210	3,050
June	305	100	470	360	225	790	1,022	370	925	1,275	1,240
July	145	108	200	210	280	460	801	105	445	1,215	235
August	360	145	170	180	145	16	441	270	625	720	402
September	700	45	370	305	400	95	893	430	425	495	730
October	870	1,130	400	1,875	770	1,330	1,000	510	955	1,775	2,280
November	1,620	920	1,420	2,670	1,890	2,280	1,415	1,820	1,802	2,965	3,790
December	1,690	750	2,140	1,470	2,140	2,890	1,608	3,440	3,295	3,835	4,780
January	1,810	2,920	1,820	1,390	2,850	3,520	2,988	2,960	2,765	3,225	3,550
Average	888	926	1,070	1,152	1,118	1,664	1,622	1,885	1,796	2,190	2,241
Monthly Average Bill	$12.72	$14.23	$14.40	$15.20	$15.34	$20.04	$20.20	$20.85	$22.41	$26.29	$26.63

Power Company-Dealer Co-operation in Appliance Merchandising

By O. N. Robertson*

Chairman, Merchandising Section, California Electragists, Southern Division; President, Robertson Electric Company, Santa Ana

WITH merchandising and load-building the paramount issues before the industry today the report of the Merchandising Section of the California Electragists in which a plan is offered for co-operative appliance selling is exceedingly timely. The report states the position of the contractor-dealer with reference to appliance merchandising and outlines a plan whereby teamwork on the part of the four branches of the industry will bring about greater distribution of current consuming devices.

THE need of the hour for the electrical industry is more sales volume in electrical current-consuming devices. We are faced today for the first time with the fact that power companies have more kilowatt-hours to dispense to the consumer than they ever have had, and throughout the country today more interest is being taken in developing highly trained organizations for the purpose of acquiring new business at almost any price. Therefore, the Electragist merchandisers of California through their organizations are presenting this report as a constructive help in solving this problem confronting the industry today.

This report is the combined effort and thought of the Merchandising Committee of southern California and merchandisers from the north. In it we hope to set down the method which we as Electragist merchandisers believe is the most economical way of forcing the sales of electrical appliances. This method calls for closer teamwork on the part of all branches of the industry.

It will take the combined efforts and best plans of every branch of the industry to bring about in the next five or ten years the complete electrification of the home. It is going to take teamwork on the part of every branch of the industry to develop the use of electricity to an equal place with the development of the making of electricity in California where financing and engineering genius have played such a prominent part.

It is quite apparent, as we see it, that in the development of the central station and the electrical business as well, there was first an era of pioneering. Now we are in an era of expansion of lines and equipment, of consolidation, and of restricting expenses, to meet the present load demand. In the near future we shall have the era of merchandising. Are we going to be ready for it? What are we going to do to be organized and ready to promote and maintain the era of merchandising that is to come? Those who have watched the trade magazines have become impressed with the large amount of open territory available for the sale of current-consuming devices. The most popular appliance we have today, the one which we think least of, and yet it would be hardest to deprive a housewife of, the flatiron, is yet to be sold to 30 per cent of the market of the United States. In California the market is supplied practically 100 per cent. The next popular appliance, the toaster, is used in only 27 per cent of the homes. When we get on down to the larger current-consuming devices, such as refrigerators, ironers and electric ranges, only one-half of one per cent to 3 per cent of the markets are supplied. The mountain is gigantic. It will take years to tear it down to a flat plain. We can never attempt to scale the mountain or go into its depths unless we have organized effort on the part of manufacturers, central station, jobbers, and the dealers.

The guiding men of our industry today are realizing this very fact, and are placing more emphasis on it every day. John Gilchrist, vice-president of the Commonwealth Edison Company of Chicago, very recently made this statement: "The jobber and dealer I think will surely become more, rather than less of a factor. The prices of sales, particularly of appliances, are on a much better plane now than they were a few years ago. Margins to cover cost of sales have been widened very radically, and we will, I believe, see a great force of people, other than utilities, devoting time and energy to placing all kinds of appliances on the power companies' lines for pecuniary reasons of their own."

Yet we are faced with this proposition, and every one is familiar from experience with what we want to say. It is a known fact that the dealer department of a contractor-dealer's business has never been able, except in a few isolated cases, to make a profit or even break even after the year's work is counted and the cost scrutinized. The same capital and ability in other fields would have produced more profit for them. There have been many reasons for this. Often the dealer himself has been responsible to some extent, but not all. Internal economic conditions have been against him. How-

* Paper presented as Report of Merchandising Section, California Electragists' Convention, Del Monte, Calif., Oct. 1-2, 1926.

ever, since we have increased discounts, which, though in some cases meant a raise in the list price of an article, the going has been a little easier. Down deep in the hearts of all men operating merchandising departments who will count the cost as it must be counted from an economic standpoint, is the knowledge that it has been practically impossible to make the merchandising department break even.

What do we mean by an accounting of the cost from an economic standpoint? We mean consideration of all the cost items in the selling of merchandise, be it a large or small establishment. We will list then those costs mentioned: management, occupancy, interest on investment, license and taxes, insurance, advertising, warehousing, sales expense, demonstrating expense, depreciation on shopworn and obsolete merchandise, depreciation on accounts receivable, miscellaneous, items such as telephone, light, heat, accounting, and last, and a very important item, service cost.

There is, therefore, a gap which seems impossible to jump, under present economic conditions, between the list price, or the price received for current consuming devices, and the cost of the article plus the sales and overhead expense involved in making a sale.

What are we going to do to pioneer our electrical merchandise in order to sell the consumer properly; in order to make a return on our investment, whether it be a power company's money or a dealer's money; to bridge this apparent impossible gap? Shall we raise the list price of an article? All hard-hearted business men know how volume decreases when a price is raised. What will make it possible to gain these objectives mentioned and give increased volume of business to the manufacturer, the jobber, the dealer, and to increase year after year the volume of electricity sold?

We believe that there is a way out which is being tried and successfully followed in one form or another by many companies throughout the country. It is only necessary to read the trade magazines to find out many of these plans that are followed by broad-minded central station merchandisers.

We feel that a plan whereby closer teamwork can be gained from a dealer, who is coming more and more to be recognized as a logical outlet for merchandise, should be considered.

As the national Electragists have created and put into effect and proved the economic necessity of a policy of distributing all electrical merchandise from manufacturer to jobber, to contractor-dealer, to consumers, we therefore enunciate the following fundamental merchandising plan to be used in any district in California, a plan which contemplates the sale of all current-consuming devices through the dealer. We choose to call it the "Through-the-Dealer Sales Plan."

We believe this plan to be a sound economic policy for the distribution of current-consuming devices to the consumer; a policy which will take up the gap apparently impossible to overcome in any other way, between the cost of selling, either by the central station or the Electragist dealer, and the retail price obtained; a policy that will force-feed the sales of appliances and produce that "plus business" which is so essential to the successful operation of any business, be it the selling of electricity, the selling of automobiles, or the selling of current-consuming devices.

We mean by this "Through-the-Dealer Sales Plan" that all lamp-socket appliances and heavy duty appliances shall be sold through the dealer, preferably at manufacturers' list prices.

In the first place, let us consider the phase of this plan which contemplates the sale of lamp-socket appliances such as percolators, toaster, waffle irons, etc. It is necessary in any business to have campaign articles, and we know of no business where it is more important than in the electrical business, for we constantly are creating customers for our products, be it electricity or merchandise.

This plan contemplates, in brief, the purchase by the power company of campaign articles of reputable competitive make, and placing them in the dealer's place of business, on consignment, at a price that will allow the dealer a fair margin in selling to the consumer in his store. The power company's position is to advertise and promote these sales through demonstrations, displays, broadsides in monthly bills, and other mediums of sales promotion. The demonstration and creation of consumer demand for the appliances, which, years after they are sold will continue to bring revenue to the power company even after the loss or gain is forgotten by a dealer, are most important items to consider. Time payment or terms on all goods must be the same as good business judgment permits, but should be an item to entice the purchase of such goods. It would be a benefit to the entire industry if the financing of time payment contracts could be handled in conjunction with the power company policy. We must remember in the offering of time payments as an aid to volume of sales the timely word of caution by Roger Babson against too long extension of credit to pay, when he says: "The time payment method of paying for merchandise is the one economic factor that is gnawing at the vitals of American business today, and sooner or later, must come to some adjustment to insure continued prosperity for our nation's business."

It is expected, and is evident to all merchandisers, that when campaign articles are being advertised and sold, forty to fifty per cent, even more, of the volume of sales at least, will be of a nationally advertised line, which of course is carried in stock normally by dealers, and sold at nationally advertised prices.

In the case of overstock on articles sold at campaign prices, or obsolescence, special prices can be arranged and put on such merchandise through team work with power companies and dealers in various districts, making it possible for each dealer to sell the same thing at the same time, thereby keeping the stock of campaign appliances clean.

In the case of heavy duty appliances where campaigning is necessary, and it is necessary continuously, either on a price basis, demonstration, or advertising basis, the power company may buy them,

place them in the dealer's store on consignment, say, one to each enterprising dealer, with all sales to be made through the dealer. Of course the more progressive dealers can purchase a larger stock of ranges or appliances through the regular jobbing channel. This makes it easier to sell the consumers as a better variety of models will be available to choose from. It is not considered necessary for the central station to act as a handling agent, only as local conditions might dictate. Those eligible to participate under this plan are contractor-dealers or merchants who have maintained inside wiring departments capable of wiring and installing any of these appliances and later giving any proper service that may be necessary.

This plan contemplates the power company having salesmen out over their territory promoting the sale of these appliances as well as the dealer. It is evident that the service rendered to the consumer would be far above what might be rendered by the power company alone, or the dealer alone. There may be some skeptics who are in doubt about this point, but we want to state that we can give specific cases where dealers on a job, and the power company salesmen on the same job, working against each other, have so disgusted a customer in the presentation of their various cases that they have found other means of heating their hot water tanks, or using electricity for cooking. This is not something taken out of the clear sky, but is an actual fact that has been repeated in the experience of many in the industry. Many may argue that the sale of merchandise by the power company stimulates a dealer's business and gives competition, but we can say that a larger part of the competition we have found is of a destructive type, principally because of the commissions paid central station salesmen selling direct to consumers and price concessions far beyond what is profitable for a dealer.

We will not have team work as long as we have such destructive price competition, be it on merchandise or commissions, between an electrical store and a central station.

If the power company in a larger city wishes to maintain and operate an aggressive merchandising department, should it not be operated as a separate organization doing business on a strictly merchandising basis, buying and handling its own stock, doing its own financing, and handling its own accounts with customers, not placing customer account through power company consumer accounts?

There are many obvious advantages to this whole plan, though on first thought a number of objections may arise, but an honest and careful analysis, as we have given it, will prove its many advantages to the power company. It will be possible to sell better appliances, render a more complete and satisfactory service to a consumer, and encourage the use of electricity. It will keep in the hands of the power company, which no doubt is most interested, the control of consumer contact. The quality of merchandise sold to the consumer can largely be controlled; domestic and commercial equipment can more properly be displayed and promoted. We can participate then, as all working on one side, instead of a dealer selling as a competitor to the central station, which never has worked out as an economic success. It will encourage continuous education, but all along one definite line, which is the most vital necessity in the electrical business today. It will not leave in the hands of the power company merchandising managers a large stock of merchandise that is becoming obsolete. An additional big advantage to the power companies is that they will not have term accounts as accounts receivable with customers which have to be collected by the usual high pressure methods necessary in collecting overdue accounts; no reserve for bad debts, no disgruntled customers. It will mean that the dealer will be encouraged with a return for his efforts, as against receiving no encouragement, with no return for his efforts. It will place good will, public contact, and the domestic load of the power company in synchronism with the progress of our industry and the complete, whole-hearted good will of dealers and workmen throughout its territory.

To the manufacturer it naturally means increased business in the way of appliances, transformers, generating equipment, and on down the line. To the jobber it means the same thing as to the manufacturer, and also, no doubt, a little quicker turnover than they have at the present time.

To the dealer it means an awakening to the profitable selling before him of electrical appliances, sold through that outlet that really can give a satisfactory service. It will mean added impetus to the promotion of the Red Seal Home, for a contractor-dealer can better see the return for his efforts in direct sales. They can continue in the business of giving service to the consumer, and by so doing will cement closer relations between themselves and the industry. Naturally, it will ferret out those who will work from those who won't. We believe it will lead to this ultimate result as an accomplishment, as James E. Davidson, past president of the N.E.L.A., says that "What the household wants from the power companies is not raw kilowatt-hours, but help in washing, ironing, refrigerating, cooking, heating, cooling, lighting and so on—human service that can only be rendered when appliances are installed."

This "Through-the-Dealer Sales Policy" is not new in many respects, but it is one which surely can answer the questions which were brought out in the early part of this discussion, and we therefore are offering it as a policy, the same as our other national policies; chiefly: the distribution of merchandise from manufacturer to jobber, to contractor-dealer, to consumer. No doubt there will be, and we invite extended discussion on this subject, for through such discussion, the merits or demerits of this policy will be quickly brought to our combined attention. We are sincere and believe that in this policy economically lies the success or failure of the Western part of our country to measure up in the increasing of domestic load, as it has measured up so far in the building of larger lines and greater generating plants.

CENTRAL STATION CONSTRUCTION OPERATION AND MAINTENANCE

Small Creek Developed for Power and Irrigation

By A. H. CROSSMAN, Assistant Engineer, Distribution Department, The Southern Sierras Power Company, Riverside, Calif.

Full utilization of the small quantity of water in the San Gorgonio River (Riverside County, Calif.) is made possible through an interesting installation of two small hydro plants. An average of 9 acre-ft. of water per day is available for the two plants which utilize the water at heads of 1,770 and 900 ft. to produce 1,500 and 750 kw., respectively. From the tailrace of the lower plant the water is used for irrigation of the fruit groves north of Banning, Calif.

General Features

For best efficiencies the plants must be run close to maximum capacity. This obviously means that storage and regulation of water must be effected.

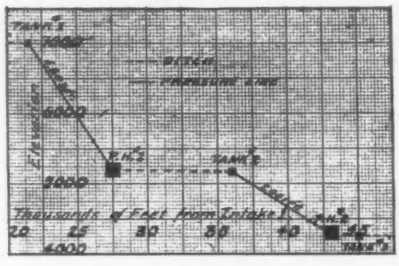


Fig. 1. Schematic chart showing relative positions of the two San Gorgonio plants.

Further, the users of the water for irrigation purposes desire a continuous flow.

These diverse demands are met by the use of three storage tanks. The uppermost of these has a capacity of about 2.85 acre-ft. and provides the storage necessary for the two plants. The second tank, located between the two plants serves only as a forebay and equalizer for Plant 2 and the third tank serves as a regulating basin for delivering a smooth flow to the irrigationists.

The watershed totals about 5.7 sq. miles and lies at elevations ranging from 7,050 to the summit of Mt. San Gorgonio at 11,485 ft. Intakes are arranged to collect all of the water available in the upper tributaries of the river and are connected to the reservoir tank by some 7,765 ft. of open ditch and 13,735 ft. of concrete-lined canal. The former is 20 in. wide and

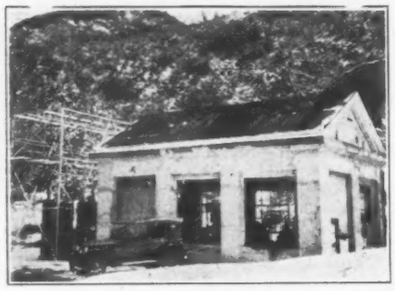


Fig. 2. San Gorgonio Plant No. 2.

Fig. 3. Looking up San Gorgonio wash toward Plant 2, showing character of watershed in background.

the latter 30 in. wide and 21 in. deep. High-water elevation in the reservoir is 7,032, giving a total of 51 ft. drop in the 21,500 ft. of canals. Steel pipe grading from 18-in. No. 10 at the top to 16 x 9/16-in. at the bottom connects the reservoir with the nozzle at Plant 1. Plant 1 discharge is carried through 8,419 ft. of ditch to the tank serving as forebay for Plant 2 and which is connected to Plant 2 by an 18-in. steel pipe grading from No. 10 to ⅜-in. Plant 2 discharges into the third tank which serves as a source for the irrigation water.

Under normal conditions of rainfall and plant operation the stream flow is equal to ⅔ of the plant demands. This means that the plants normally are operated through two 8-hour shifts, allowing the third for the upper reservoir tank to refill. During abnormal or subnormal conditions the plants are operated in such a manner as to conserve the water available. Barring only flood conditions no water is spilled. Remote water-level indicating apparatus keeps the operator at Plant 1 constantly informed as to the water levels in the forebay tanks of the two plants.

Plants

The upper plant contains a 2,330-hp. Pelton impulse wheel controlled by a Pelton type 0.3 governor. Directly connected is a Westinghouse 1,875-kva. synchronous generator and 35-kw. d.c. exciter. This plant normally is the controlling plant and therefore has the necessary equipment for the operation of Plant 1 and for receiving remote indications of operating and load conditions from Plant 2.

Plant 2 equipment is similar to that of Plant 1 except that the wheel is of 1,030-hp. rating, the generator a 938-kva. unit, and the exciter only 15 kw. Control equipment is arranged for normal operation from Plant 1, but may be switched over for manual control right at Plant 2 when occasion demands.

Control circuits operating at 220 volts connect the two plants so that the operator at Plant 1 may control the starting, stopping and operation of the generating unit at Plant 2. Normal operation control is through a sequence of relays which takes care of the various intermediate steps incident to normal starting or stopping of the unit. An emergency control is provided whereby the unit may be shut down quickly when some unusual or dangerous condition arises. Automatic protective devices at Plant 2 protect the unit from excessive variations in load, speed or temperature.

This arrangement of remote control together with the automatic protective features acts to reduce the operating costs of Plant 2 in particular and of the two plants as a unit of the system. Under normal conditions there are two operators stationed at Plant 1. The superintendent of the two plants is stationed at Plant 2. This arrangement enables the discharge of the necessary plant routine at Plant 2 in an economical manner. The superintendent usually attends to nothing but the usual meter readings, changing of recording-instrument charts and general inspection. Plant operation under this arrangement has been satisfactory.

These plants are owned by the San Gorgonio Power Company, but full output is sold to The Southern Sierras Power Company.

600-kw. Sub Destroyed by Fire Replaced in 22 Hours

By W. C. FOSTER, Assistant Operating Engineer, Portland Electric Power Company, Portland.

An example of quick and ingenious restoration of service in a serious emergency was displayed by the Portland Electric Power Company when its substation at Beaverton, Ore., was destroyed completely by an early morning fire May 26, 1926. The substation building in question was of brick and wood and housed a 750-kva. bank of

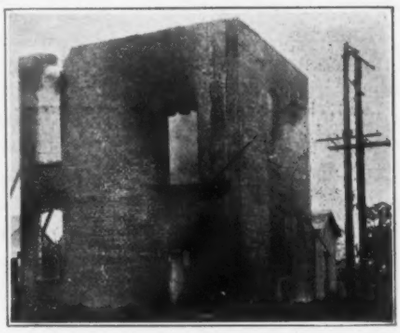


Fig. 1. Beaverton sub of Portland Electric Power Company, as it appeared the morning after the fire.

57/22-kv. transformers, together with oil switches, lightning arresters and all other usual equipment. The station served Beaverton at 2.2 kv. and also served Hillsboro, Ore., and many smaller towns and rural communities

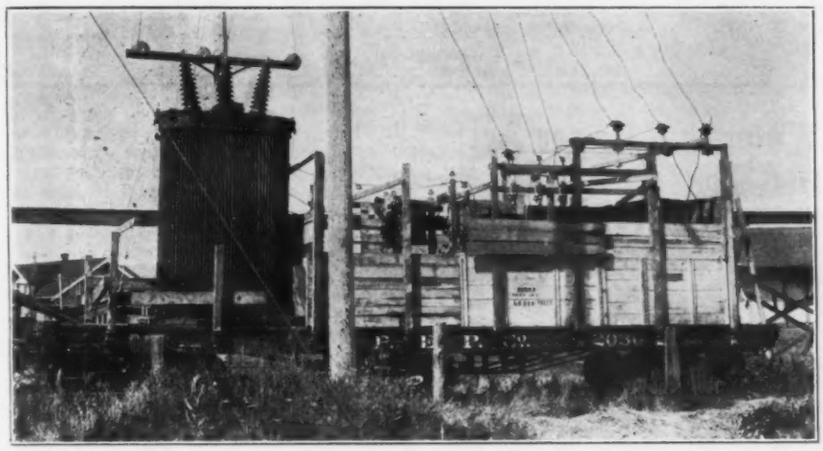


Fig. 2. Temporary Beaverton sub, assembled and placed in service within 22 hours after the fire started.

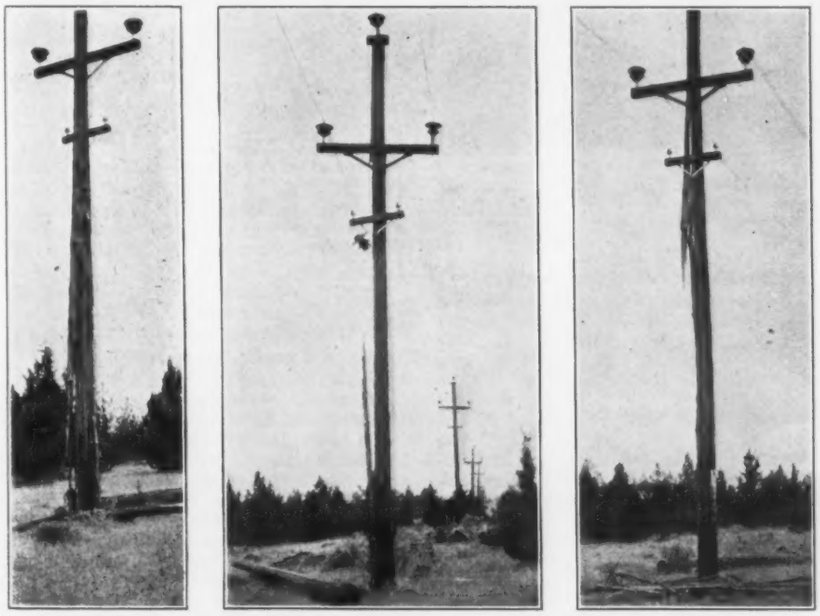
at 22 kv. Formerly it was the property of the North Coast Power Company, later acquired by the Puget Sound Power & Light Company, Seattle, and recently purchased by the present owner.

Immediately after the fire broke out, at about 2 a.m., company engineers began to lay plans to restore service. Inventories of idle equipment were canvassed and schemes for robbing equipment in service were considered. A 600-kva., 57/2.2-kv. 3-phase transformer was in use at Gresham delivering service which could be supplied from another direction. It was decided that this unit could be used for the 2.2-kv. Beaverton service, and that the 22-kv. 3-phase distribution for the other towns and rural service could be supplied through a step-up bank from the low side of this transformer. There being no transformers of proper size and voltage to accomplish this step-up, the engineers determined to use four 200-kw., 11/2.2-kv. transformers that happened to be in stock. The plan was to work these together in pairs by connecting the primaries of each pair in series to get the desired 22 kv. The secondaries then could be connected in open delta to the 2.2-kv. bus fed by the larger transformer and the necessary step-up accomplished. An examination of the records had disclosed that the capacity thus provided would carry the 22-kv. load normally supplied from this station.

These transformers with the necessary oil switches and two 2.2-kv., 200-amp. regulators were gathered together at the Hawthorne Building where the company maintains some of its stores and shops and were mounted on a flat car commandeered from the railway department of the company. When this work was completed the car was rushed, by arrangement with the Southern Pacific Railway for "special train" right-of-way over all other traffic, to Beaverton where it was shunted onto a side track near the site of the demolished substation. In the meantime a line crew had been busy. The high line had been tapped and a 57-kv. 5-pole stub line built to the side track where the car was to stand.

This work was carried on all during the day of the fire and extended well into the night; final taps and connections were completed about midnight. The switches were closed immediately energizing the entire distribution system for the service of hundreds of customers who had waited only 22 hours, believing that they would have to make the best of an outage of several days duration.

Plans already are under way for the permanent replacement of the destroyed substation. This is to be an automatic station with transformers outdoors and with regulating and re-closing equipment in a concrete building. It will have double the capacity of the old station, or 1,500 kw., in anticipation of growth in the territory for some years.



Nineteen poles were damaged, 11 to the extent of necessitating replacement, when lightning struck the 66-kv. transmission line of the California Oregon Power Company between the Copco plants and Kennett, May 22. No damage was sustained by electrical apparatus and the interruption to service over the line was only momentary, the line being returned to service immediately and kept in service until the repair gang was ready for the line.

Operating Figures on New Edison Plant.—During the month of August, 1926, the No. 2 steam plant of the Southern California Edison Company generated 89,232,200 gross kw-hr., using 54,350 bbl. of oil and 802,414,000 cu.ft. of gas. The plant includes a 50,000-kw. turbine in service July 10, 1926, and two 35,000-kw. turbines in service about a year earlier. Average boiler efficiency was 81.54 per cent, average kw-hr. per bbl. of oil were 425.81, and average B.t.u. per net kw-hr. 14,677.

New Oil Circuit Breaker Combines All Three Phases in Single Tank.—Increased interrupting ability; rugged, oil-tight construction; increased electrical clearances; and minimum space requirements are claimed for the new Westinghouse breaker. The tank is cylindrical in form with belled top and bottom to effect economical use of materials and to present maximum resistance to internal pressure. A single operating lever protrudes from the rear of the tank; the rest of the levers are within the upper dome.

Aluminum Paint Causes Transformer Troubles.—According to the General Electric Company, a customer recently returned to the factory a transformer which had failed in service. The oil was dirty and carried a large amount of black sediment. Analysis proved the sediment to be aluminum. Further investigation developed the fact that the customer had sprayed the exterior of the transformer tanks and other adjacent equipment with aluminum paint. Inasmuch as the job was done in a closed building it seems that the atmosphere became more or less saturated with the paint spray resulting in the metallic aluminum being carried into the transformers through the breathers.

NEWS OF THE INDUSTRY

Reasons Why California Water and Power Act Should Be Defeated

For the third time the so-called Water and Power Act in the form of a proposed constitutional amendment will appear on the ballot on Nov. 2 for acceptance or rejection by the California electorate. The same measure has been defeated decisively at two previous elections. Cogent reasons why it merits an even more overwhelming defeat at the forthcoming election are set forth in the following argument by Senator Arthur H. Breed, president pro tem. of the California Senate:

The pending Water and Power Act has been twice rejected by the people. Four years ago it was rejected by a majority of nearly 354,000 and two years ago by a majority of more than 431,000.

It is a constitutional amendment which pledges the state's credit to an issue of $500,000,000 of tax-free state bonds. A board of five persons, appointed by the governor, would spend the money in acquiring, operating and maintaining such water and power projects as it deemed necessary or convenient. This political board would operate the projects from Sacramento, fix rates, and determine conditions and quality of service, all without regulation by the Railroad Commission. Consumers and communities would thus be at the mercy of five politicians with a virtually unrestrained control of industry. Should incorrect estimates, inadequate service or political mismanagement prevent projects from paying expenses or meeting interest charges or requirements for repayment of principal out of rates, explicit provision is made to meet deficits and losses out of the general funds of the state. The board is empowered to appoint such employees as it may require, and fix their compensation. These employees are exempted from the state civil service law, so that the board can build up a great political machine through patronage.

Advocates of the measure seek to take political advantage of California's occasional dry years and its constant concern about water problems by making the water and power amendment as a water conservation plan, but public ownership will not increase rainfall. What California needs in times of drought is more rain, not more empty reservoirs.

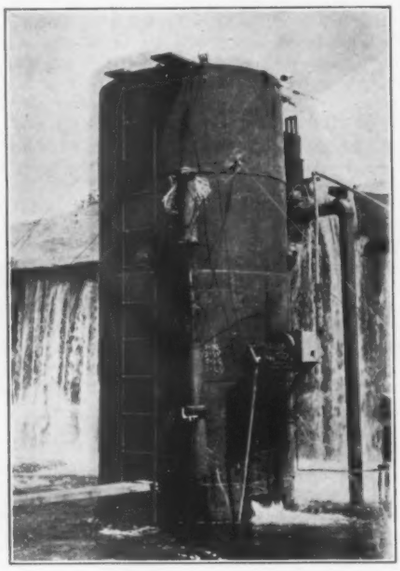
There is no public need for the state to embark in the power business, and no good reason for adding half a billion dollars of tax-free bonds to the huge volume of such securities outstanding. Some advocates of the water and power measure, undismayed by the failure of North Dakota in the wheat and banking businesses, and of many other government ownership projects, favor the act as a first step in California toward the taking over by government of essential industries and the redistribution of private wealth through taxation. There is no more reason why the state should adventure into the power business than into the flour or automobile business. Less than sixteen years ago the state undertook effective regulation of public utility companies. As a result, the rates, investments and service of such companies are now controlled by a public agency. To scrap the policy of regulation and substitute public ownership would be unjust and foolish. Even those who assert that regulation has failed cannot logically offer as an improvement a new commission appointed like the Railroad Commission by the governor and given the insufficiently restricted power of expending the taxpayers' money and hiring armies of employees.

Private initiative and effort developed California. Political managament is usually wasteful and inefficient, and to compel taxpayers to provide enormous amounts of borrowed money for the financing of unspecified ventures by a political machine would be to invite disaster.

The voters should rebuke, by a majority lager than before, the restless agitators who refuse to accept the decision of the people twice so emphatically expressed. Such repeated submission of measures repeatedly rejected by the people should be prohibited.

Experiment in Lifting Fish Uses New Device Successfully

A successful experiment in raising fish over dams, using the new Wheeler patent fish lift, recently has been completed at the Winchester Dam of the California-Oregon Power Company, on the Umpqua River in Oregon. The



Wheeler patent fish lift installed for experimental purposes at the Winchester dam of the California Oregon Power Company on the Umpqua River in Oregon.

Wheeler patent, the invention of J. R. Wheeler, construction man at Reedsport, Ore., for the West Coast Power Company, Portland, utilizes an iron cylinder placed upright in the river and extending from the river bottom to the top of the dam to be surmounted. The fish, swimming in the pools at the base of the dam, are trapped and induced to enter the cylinder through a gate near the bottom. At this period of the operation the level of the water in the cylinder is that of the stream below the dam. At suitable intervals this gate is closed and water is introduced into the cylinder from the top. Within the cylinder a screen, suspended horizontally from floats on the surface of the water, remains two or three feet below the surface and, rising with the water, keeps the fish swimming near the surface. When the cylinder is full a gate near the top opens and discharges a volume of water containing the fish into a flume leading to the reservoir above the dam. Operation of the gates is automatic and can be timed to suit the conditions of the run of fish to be lifted.

The experiment was financed by several Northwest power companies and the Oregon State Fish Commission and completed with the personal assistance of Paul B. McKee, vice-president and general manager, California Oregon Power Company, Medford, Ore., J. E. Yates, assistant chief engineer, Pacific Power & Light Company, Portland, and the inventor. During a recent run of steelhead trout, observers saw fish delivered to the upper side of the dam and believed the device could be applied in practice.

Tunnel of San Joaquin Company's Balch Plant Holed Through

The tunnel of the San Joaquin Light & Power Corporation's Balch plant on the Kings River, about forty-five miles from Fresno, Calif., was holed through Oct. 11. The final blast was fired by Miss Martha Wishon, daughter of A. E. Wishon, vice-president and general manager of the company, at the ceremony held in honor of the occasion. Work on the tunnel, which is about 19,350 ft. long and 12x12 ft. in cross-section, was begun Sept. 15, 1925.

The Balch plant, the first unit of a series of hydroelectric plants to be erected on the Kings River by the San Joaquin company, is to be operated under an ultimate static head of 2,470 ft., which will establish a new American record. The initial effective head will be 2,280 ft., the static 2,355 ft., and the initial generating capacity 28,250 kw. The planned ultimate capacity of the plant is six units, each of that size. Full details of the project were published in the Journal of Elecrticity, April 1, 1925, p. 241.

Construction work is in charge of H. K. Fox, who has been chief engineer of the project for several years.

Electric Furnace Installations in Pacific Northwest

With the purchase of a 1-ton-per-hr. 'Lectromelt furnace by the Puget Sound Iron & Steel Company of Tacoma two large electric furnace installations have been made in the Pacific Northwest during 1926.

The first was a 1,500-kw. installation of the same type in the foundry of the Northwest Steel Rolling Mills, Inc., of Seattle. The Tacoma installation has a capacity of 600 kw. and is served by the Tacoma Lighting Department. The furnace was sold by E. A. Wilcox, industrial heating engineer representing the Pittsburgh Electric Furnace Company.

California Governor Calls Special Session to Ratify Six-State Compact

A special session of the California Legislature has been called by Governor Friend W. Richardson for Oct. 22 for the purpose of ratifying the six-state Colorado River compact.

In his call for the extra session, after pointing out that the six-state compact has been ratified unconditionally by the states of New Mexico, Nevada, Wyoming, Utah and Colorado, Governor Richardson continues in part:

"The six-state compact was drawn for the purpose of enabling the federal government to proceed without delay to erect structures in the Colorado River designed to protect Imperial and Palo Verde Valleys from the great danger of flood, to assure an adequate and a regulated supply of water for Imperial and other valleys, to provide additional water for Arizona lands, to provide additional domestic water for the cities of southern California and to develop hydroelectric power.

"Reservations and limitations written into the six-state compact by the California Legislature in 1925 proved unacceptable to the five other states, and, unfortunately, blocked all opportunity for action at the last session of Congress. . . . The short session of Congress will begin in the first week of December. There will be a general rush to obtain favorable action on numerous proposals, among them the Colorado River program outlined by Secretaries Hoover and Work and embodied in the amended and rewritten Swing-Johnson bill.

"This measure contains a provision requiring unconditional ratification of a river compact by at least six states, including California, before any appropriation may be made or any work undertaken for Colorado River control and development. California must ratify the compact before Congress meets or no action can be expected. The cost of a special session is a small sum compared to what is at stake.

"There is a vital need for action that will lead without delay to protection of the lives and property of the men and women of Imperial Valley. The danger of flood, constant and increasing, must be eliminated if this productive region is not to be inundated and destroyed. The schemes of petty politicians who thrive on water agitation, should be swept aside and Colorado River development placed on a non-political basis.

"Nothing should be left undone by this state calculated to encourage prompt congressional approval of the great river project."

A group of officials of the Public Service Company of Colorado, Denver, in front of the company's new steam plant at Valmont, east of Boulder. From left to right they are—R. E. Berger, of the New York office of the Cities Service Company; C. A. Semrad, vice-president and general manager of the Public Service Company; F. S. Henderson, manager of the Western division at Boulder; G. W. Faller, vice-president; J. E. Elftman, chief engineer in charge of the Valmont plant; C. N. Stannard, vice-president and general manager; V. L. Board, general superintendent; and H. H. Kerr, superintendent of electrical department.

Colorado Utility's Budget for Ten Years $45,000,000

Expenditures totaling $45,000,000 over a 10-year period are projected tentatively by the Public Service Company of Colorado in budgets announced at Denver.

The principal items scheduled are: Approximately $3,000,000 a year to care for expansion of the Denver district in permanent additions to properties; expenditure of $3,000,000 within the next three years for enlargement of the Valmont steam plant east of Boulder; expenditures of from $5,000,000 to $15,000,000 to supply Denver with natural gas if such supply is decided upon, or $3,500,000 for improvements and additions to the artificial gas plant if the natural gas project is delayed.

Immediate expenditures proposed include $1,500,000 for a new service and warehouse building at Denver; $1,500,000 for enlargement of the Valmont plant and $800,000 for completion of a new gas plant in Denver.

Two plans for bringing natural gas to Denver are under consideration. One, using the Fort Collins field in northern Colorado as the source of supply, is estimated at $5,000,000. The other, which would utilize the natural flow of wells in the field in Amarillo, Texas, would cost $15,000,000, it is estimated.

In announcing the budget, V. L. Board, general superintendent, stated that the electric load in August, 1926, was 10 per cent greater than for the same month a year ago. The most important reason assigned was a revival in the metal mining districts of the state. Mr. Board stated that normal material purchases of the company run about $3,500,000 a year and that the total operating and construction payrolls aggregate $3,350,000 annually. About 40 per cent of the construction outlay is for labor.

Utility Reduces Par Value of Stock from $100 to $25

At a special meeting of the stockholders of the Pacific Gas and Electric Company, San Francisco, held Oct. 11, the action of the board of directors in reducing the par value of the common and preferred stock of the company from $100 to $25 was approved officially.

The date of issuance of the new certificates has not been determined but it will be probably within the next thirty or sixty days, according to the official announcement. Notice as to when the plan will become effective will be sent to stockholders, and in the meantime the status of the old stock with regard to transfers, dividends, and in all other respects remains the same as before.

Power Development in Snohomish County, Wash., Planned

A new hydroelectric power development in southeastern Snohomish County, Wash., at the foot of the Cascade Range, is forecast by three applications for water rights filed recently at the state hydraulics office by D. W. Stevens of Seattle. The applications seek permission to divert 30 sec.-ft. of water from the East Fork and 10 sec.ft. from the West Fork of Troublesome Creek and 5 sec.-ft. from the Sultan River. Two reservoirs are contemplated; one, to be known as Twin Lakes Reservoir, is planned for a storage capacity of 8,000 acre-ft., and the other, Blanca Lake Storage, for a 20,000-acre-ft. capacity.

Owing to the fact that a number of surveys are yet to be completed, estimates of the horsepower to be developed and of the cost of the project have not been announced.

Colorado Utility Is Installing Steam Plant at MacGregor

The Colorado Public Utilities Corporation is making rapid strides in the erection of a structure to house its new steam generating plant at MacGregor, Colo. Progress also is being made in the construction of transmission lines from MacGregor toward Hayden, Craig and the oil wells of the Moffat fields. This corporation recently took over the electric light systems in Steamboat Springs, Oak Creek, Hayden and Craig, Colo. It is said that by fall the plant will be in operation to supply those towns and likewise the mines in Routt and Moffat Counties.

The first unit to be installed will have a capacity of 2,700 kw., and it is estimated that the original cost of buildings and electrical equipment at the central plant will exceed $200,000. Ample provision is being made for additional units as development of the territory requires.

Experimental Arch Dam on Stevenson Creek Holds When Filled to Full Height

The experimental arch dam built under the auspices of Engineering Foundation on Stevenson Creek in Fresno County, Calif., failed to break when filled to overflowing at its present height of 60 ft.

This experimental dam is 7½ ft. thick at the bottom and tapers to a thickness of 2 ft. 30 ft. above the base. Above that level the 2-ft. thickness is constant. The dam measures 140 ft. along the crest, is 60 ft. high, and the arch has a radius of 100 ft. Preliminary work was begun in the fall of 1925. (Journal of Electricity, March 1, 1926, p. 197.) Excavations were made to make the base line of the dam as nearly a perfect V as was practicable in order to have a symmetrical cross-section which would permit of subsequent analysis with a minimum of complications. Pouring of concrete was completed June 4.

Looking down stream at the experimental arch dam before the reservoir was filled. This picture gives some idea of how admirably Stevenson Creek Canyon lends itself to the experiment. Its precipitous side walls make it possible to build up a head of more than 100 ft. with the use of a remarkably small total volume of water. With the dam at its present height of 60 ft. the reservoir contains less than 5 acre-ft.

Thirteen load tests were made, the first on July 12, and continued intermittently until late in September. With a head of less than 50 ft. no leakage through the concrete of the dam or through any of the construction joints developed although there was a slight leakage around the ends of the dam. When the head was raised to 50 ft. a small patch of moisture, about twice the size of a man's hand, appeared at a construction joint about 15 ft. above the base of the dam. When the maximum head of 60 ft. was reached the moist area increased to approximately 7 ft. square. There was also some leakage around abutments. The dam contains no reinforcing steel, and no special provision was made in the concrete to make it waterproof.

Exceedingly accurate measurements were made of strain and deflection in testing, and the committee reports that it is highly pleased with the results which thus far have been obtained. It is expected that a full and complete report will be prepared as soon as practicable in which all results will be tabulated.

Approximately $100,000 has been spent upon the dam to date. This money was contributed by public-spirited organizations throughout America, representing manufacturers, investment bankers, engineers, engineering schools and public utilities. It is hoped that additional funds may be secured so that the dam may be raised to 100 ft. in height.

H. W. Dennis, chief civil engineer of the Southern California Edison Company, was in full charge of the actual construction work on the dam. W. A. Slater, chief of division of concrete and masonry structures of the United States Bureau of Standards, has had charge of the securing of the test data.

Reception to A. G. Wishon Upon His Return from Europe

A. G. Wishon, president of the San Joaquin Light & Power Corporation, Fresno, Calif., was the guest of honor at a reception tendered him recently upon his return from a tour in Europe.

Inspired by the fact that Mr. and Mrs. Wishon spent three weeks in Bad Nauheim, Germany, where they took the curative waters, the party was made a Teutonic one, with a skit in German dialect, "Vot's a Vatt?" written by Al C. Joy, director of publicity for the company, and refreshments in the nature of a "Dutch lunch" of sandwiches, salad and beer.

Mr. Wishon gave an interesting account of his experiences and observations while abroad and outlined his tour, which included Germany, France, Switzerland and England, with return by way of New York and Missouri where relatives were visited. Dancing closed the evening's entertainment. About 300 employees and their families attended the reception.

Los Angeles Public Library Opens Patents Room

A patents record room has been opened in the Los Angeles public library. Though incomplete, the room contains the largest patent collection west of the Mississippi River, according to George E. Chase, who is in charge of the patents, and includes United States, British, Canadian, Cuban and German records. As rapidly as the demand warrants and funds permit it is the intention of the library board to build up the collection still further. During the first month 659 persons consulted the records, many of whom commented on the quiet, well lighted room and the value of the collection.

For the present the hours during which the patents room is open are: Mondays, Wednesdays and Thursdays, 10 a.m. to 5 p.m.; Tuesdays and Fridays, 2 p.m. to 9 p.m.; Saturdays, 9 a.m. to 1 p.m.

Utah Company Permitted to Raise Rates and Revise Rules

Permission to revise its present rules, raise rates and revise tariffs has been granted the Big Springs Electric Company of Fountain Green, Utah, by the Public Utilities Commission of Utah. The order is to affect all patrons with the exception of the towns of Wales, Levan and Nephi, where the commission held the present rates are fair and reasonable.

Under the rates formerly in effect the company was receiving 7 cents per kw-hr. for lighting and general use, and one cent per kw-hr. for domestic power and fuel, with a minimum charge of $1.33 per month. A discount of 10 per cent was allowed for prompt payment. Street lights have been furnished at the rate of 50 cents per month for 100-watt lamps and 50-watt lamps, with no discount.

The increase asked for provides a charge of 10 cents per kw-hr. for lighting and general use; 3 cents per kw-hr. for domestic power and heat; 90 cents per month for 100-watt street lights and 50 cents per month for 50-watt street lights. For general power an increase of 1 cent per kw-hr. is allowed.

Seeks Extension of Permit for Klamath River Project

The Electro-Metals Company of San Francisco has applied for a year's extension of its preliminary permit covering a proposed development on the lower Klamath River. The company's present preliminary permit has run for two years. Work under it has been suspended since the passage of referendum measures in California making a state fish and game reservation on the Klamath below the mouth of the Shasta River. This law prohibits construction of any dam or other structure in the stream which will interfere with the migration of salmon. (Journal of Electricity, Nov. 15, 1924, p 377.)

The applicant points out that the law has been under fire ever since its passage and that, as the Klamath is an important power stream, the restrictions may be modified in the future. Another possibility is that some development may take place which will make it possible to use the power resources of the stream without interfering with the run of salmon. As the company has had the project under consideration for eighteen years, it asks that its rights be extended as long as possible.

Cuba Needs Wireless Beam Station.—A treaty between Mexico and Cuba which provides for connecting the telegraph systems of the two countries by wireless has been signed and awaits ratification. Mexico has the necessary equipment, but Cuba will have to construct a new beam station.

Idaho Power Company Celebrates its Tenth Anniversary

The Idaho Power Company, Boise, recently celebrated its tenth anniversary. Ten years ago there were five separate companies engaged in the generation and transmission of electrical energy in southern Idaho and eastern Oregon. The conflict between these companies, the keen competition, the duplication of facilities in one place as against the almost complete lack in another, resulted in generally unsatisfactory conditions with service almost non-existent.

On Aug. 1, 1916, the Idaho Power Company came into being and assumed control with the objective of its management "to effect a comprehensive organization, to weld the disassociated properties into a single working unit, to eliminate the unwieldy duplications, to effect broad efficiency and sensible economy—in a word, to bring the combined properties into a union whereby service could be spelled out properly and might earn its reward," according to The Electrikat, the company's house organ.

The personnel of the company includes about seventy men who were with it at its beginning and have stayed with it continuously since that time.

Utility Gives Group Insurance Policies to Employees

Ninety-eight of the employees of the Coast Valleys Gas & Electric Company, Salinas, Calif., at a special meeting held in that city Aug. 31 were presented with group insurance policies whose face value totaled $107,750. Approximately twenty additional employees are to receive policies.

Length of service determined the amount of the policy. Employees who had been with the company from six months to one year received $500 policies; those from one year to two years $750 policies. For each year of service thereafter $250 was added until the six-year period was reached when $2,000 policies were received by all employees who had been in the company's service six years or more.

These group policies were written by the Equitable Life Assurance Society of the United States.

The policies were presented by J. F. Pollard, vice-president and general manager of the company. L. C. Jay of the San Joaquin Light & Power Corporation was one of the speakers on the evening's program.

Circuit Breaker Engineering New Westinghouse Department

A new department under the direct management of J. B. MacNeill, electrical engineer, is to be created at the Westinghouse Electric & Manufacturing Company, according to an announcement made recently by W. S. Rugg, vice-president.

The new department, to be known as the circuit breaker engineering department, is a direct outgrowth of the large increase in production during the past year of air and oil circuit breakers, air-break switches and high-voltage fuses. It is stated by Mr. Rugg that sales of this apparatus ran well over $12,000,000 last year.

The new department, under Mr. MacNeill's direction, will be concerned chiefly with new designs of circuit breakers and the development of new types.

Commercial Department Changes Made by Edison Company

The following changes have been announced by the Southern California Edison Company: R. R. Walbridge, who has been district manager at Porterville, has been transferred to the same position in the Santa Barbara district. R. H. Sterling, who has been district manager in Santa Barbara, has been placed in charge of the Santa Barbara district investment department for the company.

A. W. Frost, assistant district manager of Alhambra, has been made district manager of Porterville, succeeding Mr. Walbridge. D. F. Iverson chief clerk at Redondo, has been transferred to Alhambra in the same capacity. J. L. Kline, power and sales bookkeeper at Fullerton, has been appointed chief clerk for the Redlands district of the company. I. K. Smith, chief clerk at Redlands succeeds Mr. Iverson at Redondo.

Amplification Apparatus Test Gives New Use for Plane

A new and important field of usefulness for the airplane would seem to have been opened up through the demonstration recently staged by the Plane Speaker Corporation of Philadelphia at the National Air Races at Model Farms Field, Philadelphia. From a large airplane music and spoken messages were transmitted and projected toward the earth at altitudes ranging from 1,000 ft. to a mile, and were heard clearly by spectators on the ground without the use of any radio receiving set or other outside means.

The apparatus employed is known technically as a Western Electric No. 1 public address system. As installed in a Sikorsky, twin-motored plane the equipment weighed approximately half a ton. This entire amplifying apparatus, consisting of a microphone, amplifier panels with the necessary batteries and power supply apparatus, control switches and special loud speaking projectors, was mounted entirely within the body of the plane. No part of the equipment was visible from the outside. The three special loud-speaking projectors were mounted vertically, one in back of the other, and with the bell end pointing earthward. Forward of the projectors and in a position directly between the wings were mounted, pendulum fashion, the amplifier panels and power apparatus. The amplifier panel was suspended by means of shock cords and tension springs in order to prevent injury to the equipment during take-off and landing operations. A close-talking microphone constituted the medium by which messages and music were directed into the amplifying equipment.

Engineers of the Bell Laboratories and Graybar Electric Company, who designed and installed the amplifying apparatus, predict that with voice amplification apparatus installed the airplane of the future will become most useful and valuable in making observations, gathering important data and communicating it to large masses of people over wide areas of the country.

Report of Railroad Commission Shows Utilities' Growth

An index as to the development of public utilities in California during the period from March 23, 1912, the effective date of the Public Utilities Act, giving the railroad commission jurisdiction to pass upon public utility security issues, until June 30, 1926, is furnished by the fact that during that period the commission has passed upon $2,380,200,921.74 of such securities.

The total amount of securities passed upon during the fiscal year from July 1, 1925, to June 30, 1926, was $271,-024,507.26, of which $262,463,149.26 of stocks, bonds, notes and other evidences of indebtedness were authorized. The commission denied permission to issue $274,960 and dismissed applications for $8,286,398 of such securities.

The record for the entire period of the commission's jurisdiction shows that the commission has not exercised a "rubber stamp" jurisdiction. The record is as follows:

Granted	$2,185,407,909.92
Denied	101,838,580.04
Dismissed	92,954,431.78
Total	$2,380,200,921.74

The annual report of the commission's department of finance and accounts contains some interesting figures on utility operation during the calendar year 1925. The following comparison between operating revenues and expenses of electric companies for the years 1924 and 1925 is given:

	1924	1925
Operating revenues	$83,204,072.90	$90,706,599.06
Operating expenses	45,197,687.96	40,807,061.51
Net operating revenue	$38,006,384.94	$49,899,537.55

The number of informal complaints has dropped from a peak of 6,315 in 1923-24 to 3,453 in 1925-26, due, it is claimed, to the installation of uniform rules and regulations by the commission.

East Bay Utility District Files Condemnation Suits

Condemnation suits have been filed in the superior court of Jackson, Amador County, Calif., by the East Bay Municipal Utility District, Oakland, Calif., for land included on its Lancha Plana dam and reservoir site on the Mokelumne River in Amador and Calaveras Counties, according to press report. The complaint states that the land owned by the defendants, among which are the Pacific Gas and Electric Company, Stephen Kieffer, Western Pipe & Steel Company and a long list of banks and trust companies, is required by the district for its municipal water supply and power project and the court is asked to set a value on the properties for sale to the district.

The suit filed recently by the Delta Farms Reclamation Districts and California Delta Farms, Inc., against the East Bay Municipal Water District and against officials of the state division of water rights and the department of public works has been ordered dismissed. (Journal of Electricity, Aug. 1, 1926, p. 106.) The complaint protested against the granting of the permit to the district and asked that the evidence be reviewed and the permit denied.

News Briefs

Extension of Electric System in Melbourne.—Work estimated to cost $1,312,000 is now being carried out by the Victorian State Electricity Commission to supply additional electric energy to the eastern suburbs of Melbourne, Australia. It will have the effect of bringing 500,000 more people within the area directly supplied by the commission. The construction of the main line from Yarraville to South Melbourne is well advanced. The commission, stating that electric labor-saving domestic appliances are not being used in Melbourne to the extent justified by the low cost of operation, is advertising them, according to U. S. Commerce Reports.

Puget Sound Power & Light Company Construction.—The Puget Sound Power & Light Company, Seattle, will construct a power substation of fireproof construction, to cost $12,000, at 54 Massachusetts Street. The building will be one story high, 82 x 46 ft. in size. The company also will start work immediately on the first $25,000 unit in an aggregate expansion plan of $150,000 for the company in Bremerton, Wash. First work will be construction of an office building and operating plant, with sales rooms on Fourth Street.

Combined Net Earnings of Standard Gas Utility Properties Increase 14.69 Per Cent.—Combined net earnings of all operated utility properties of Standard Gas & Electric Company for the twelve months ended June 30, 1926, showed an increase of $7,797,710, or 14.69 per cent, as compared with the previous twelve months. Gross earnings increased $10,621,352, or 7.95 per cent.

Million-Dollar Power Project Contemplated for North Fork of American River in California.—Application has been filed with the California Division of Water Rights by the American River Water & Power Company, with headquarters in San Francisco for a permit to divert 200 sec.-ft. from the North Fork of the American River and to store 50,000 acre-ft. This application is interpreted by officials of the water division as intended to supersede previous filings made through Fred P. Tuttle, Jr., of Auburn, Placer County, Calif., about two years ago and on which no action has been taken. Mr. Tuttle, one of the organizers of the company, recently disposed of his interests to Fred Dewhirst, who is an applicant in the new filing. Plans contemplate the construction of a $1,000,000 power project in French Meadows, Placer County, including a reservoir near the town of Donner and a dam 30 ft. high.

Permit Granted for Appropriation of Water from North Fork of Yuba River.—The Pacific Gas and Electric Company, San Francisco, has been granted a permit by the California Division of Water Rights to appropriate for storage purposes 15,000 acre-ft. per annum from the North Fork of the Yuba River. Plans contemplate the development of 7,955 theoretical horsepower.

Pacific Gas and Electric Company Dams Creek to Increase Water Supply for Two Power Plants.—Philbrook Creek, a tributary of the West Fork of the Feather River in California, now is being dammed by the Pacific Gas and Electric Company to increase the water supply of its Centerville and DeSabla power plants. Plans call for an 85-ft. dam with a crest of 850 ft. to crearte a reservoir of 5,060 acre-ft. capacity. The cost of the project, which is expected to be completed before the end of the year, is estimated at $250,000.

P.C.E.A. News

Commercial Section Plans Work for Year 1926-7

The first general conclave of the Commercial Section of the Pacific Coast Electrical Association will be held in Santa Cruz, Calif., Nov. 12-13, 1926, as the result of action taken by the Section executive committee at a meeting in Fresno Sept. 28. At the same meeting plans for the work of the section for the year 1926-7 were laid out.

Following the plan of organization laid down by the Commercial National Section, the work of the Section has been divided into four classifications, namely, general, lighting, power and heating and merchandising. Various committees have been organized under each of these classifications with a general chairman heading each of the four groups of activities.

Glenn D. Smith, Ontario Power Company, Ontario, Calif., will head the general group of committees which will include a committee charged with devising a program of organization and operation which will bring continuity and permanency into work of the section. The work of the customer relations committee, which this year will publish a series of messages to employees and conduct an essay contest similar to that of last year, also will be under the direction of Mr. Smith.

The committees engaged in lighting work will be under the general direction of Clark Baker, National Lamp Works. The industrial lighting committee will continue the series of lighting lectures started last year. Requests have been received from twenty-five organizations for this lecture. The street and highway lighting committee will make a special study of highway lighting, in addition to keeping the annual proceedings of the organization up to date on street lighting developments. The commercial lighting committee will make a study of electrical advertising with special reference to electric signs.

W. C. McWhinney, Southern California Edison Company, Los Angeles, will supervise the work of the group of committees charged with studying power and heating. The agricultural power committee under the chairmanship of A. M. Frost, San Joaquin Light & Power Corporation, Fresno, will correlate existing information with referene to the steady dropping of the water table in various sections of the state with the idea of preparing information to combat the sales resistance to electric pumping which is anticipated. This committee also will make a study of electricity in the dairy industry with special reference to sterilization and refrigeration.

The industrial heating committee will continue the compilation of data for the industrial heating sales manuel issued last year. The commercial cooking committee is to compile data and report upon the operation of some of the existing commercial cooking installations in the state. The competitive power committee is to collect data relative to small Diesel engine competition and abstract from the reports of the N.E.L.A. committee such information as is specifically applicable to the territory comprising the P.C.E.A.

Committees studying merchandising and allied subjects will be under the general supervision of J. W. Wrenn, Great Western Power Company, San Francisco. The electric range committee is to make a special study of range service practices and costs. The air heating committee will issue a new edition of the air heating sales manual brought out two years ago. The refrigeration committee is to compile a resume of sales policies now followed by manufacturers and central stations in this territory and also to report upon servicing practices and costs. The general merchandising committee is to investigate the low domestic kilowatt-hour consumtion now existing in California and to make recommendations for its increase.

The national water heating committee, which is under the leadership of H. K. Griffin, chairman of the Commercial Section of the P.C.E.A., is to report upon a plan of procedure and to outline the water heater tests which are to be conducted in this territory.

Plans for the first commercial conclave of the section at the Casa del Rey Hotel at Santa Cruz call for an innovation in the form of a general meeting which will be addressed by outstanding commercial men from outside the territory of this association as well as by leaders in the commercial activities of the member companies of the P.C.E.A.

Engineering Section Committee Vice-Chairmen Appointed

In pursuance of the policy of enabling continuous committee work, vice-chairmen of all of the committees of the Engineering Section, P.C.E.A., were appointed at the Los Angeles meeting of the Engineering Section Sept. 1-3. Confirmation of these appointments as subsequently announced by J. G. Rollow, chairman of the Engineering Section, is as follows:

Accident prevention—S. M. Bullis, California Oregon Power Company, Medford, Oregon.

Electrical apparatus—R. H. Halpenny, The Southern Sierras Power Company, Riverside, California.

Hydraulic power—E. A. Crellin, Pacific Gas and Electric Company, San Francisco.

Inductive co-ordination—J. O. Binney, Southern California Edison Company, Los Angeles.

Meter—W. N. Lindblad, Pacific Gas and Electric Co., San Francisco.

Overhead systems—H. H. Minor, San Joaquin Light & Power Corporation, Fresno, Calif.

Prime movers—F. G. Philo, Southern California Edison Company, Long Beach steam plant.

Safety rules—W. E. Row, Southern California Edison Company, Los Angeles.

Underground systems—H. H. Buell, Pacific Gas and Electric Company, San Jose, Calif.

Northwest Electric Light & Power Association

Administration of Sections of Northwest Association in Capable Hands

With the question of personnel settled, work is getting well under way in the Northwest Electric Light and Power Association. The sections are in capable hands, and a busy, worth while year is forecast.

GEORGE C. SAWYER

George C. Sawyer, sales manager, the Pacific Power & Light Company, Portland, is chairman of the Commercial Section. Mr. Sawyer has been connected with that company more than 16 years, having entered its employ in June, 1910, as meter engineer with headquarters in Walla Walla. Three years later he was made district manager at Yakima, a position he held for eleven years prior to his appointment to the sales managership of the company. Mr. Sawyer's experience outside of the Pacific Power & Light Company includes three years in the electric meter department of the General Electric Company at Lynn, Mass., and three years in the meter and commercial departments of the Consolidated Lighting Company, Montpelier, Vt.

R. M. BOYKIN

Leadership of the Public Relations Section is in the capable hands of R. M. Boykin, manager of the central district of the Puget Sound Power & Light Company, Seattle. Mr. Boykin, a prominent figure in the affairs of the electrical industry in the Northwest, served as president of the association during 1924-1925. His experience in matters electrical covers a broad field, including motor installation in southern cotton mills, work on power distribution systems in Nevada mines, and operation of an electrical system in Oregon. He was vice-president and general manager of the North Coast Power Company, and when that company was absorbed by the Puget Sound company Mr. Boykin was made manager of its southern district, remaining there until his promotion two years ago to his present position.

LEWIS A. McARTHUR

The chairmanship of the Technical Engineering Section is held by F. J. Rankin, chief engineer, Idaho Power Company, Boise, a position he has held since 1921. Prior to his connection with that company he had spent four years as chief engineer for the Public Utilities Commission of Colorado and one year in private practice. He has been active in the National Electric Light Association and was one of the engineer members of its range survey committee which conducted tests on ranges in Boise and Spokane.

Accounting Section affairs this year will be under the guidance of W. L. Fitzpatrick, general auditor of The Mountain States Power Company, Tacoma. Mr. Fitzpatrick, who has jurisdiction over the accounting departments of all divisions of that company, was connected with its subsidiary, the Tacoma Gas & Fuel Company, Tacoma, and allied companies for about 14 years. Prior to his present position he was treasurer and auditor of the Tacoma company, the Puget Sound Gas Company, Everett, Wash., and the Olympia Gas Company.

W. L. FITZPATRICK

Lewis A. McArthur, vice-president and general manager, the Pacific Power & Light Company, Portland, is chairman of the rural electric service committee. Connected with that utility since 1910, Mr. McArthur has held successively the positions of chief clerk, purchasing agent, chief clerk to the president, assistant general manager and general manager. He is an authority on geographic matters and on Oregon history and holds an honorary degree of Master of Science and Public Service from the University of Oregon.

F. J. RANKIN

News of the Electragists

Daring, Frankness Distinguish Convention of California Electragists at Del Monte

No gentle-spoken, self-satisfied effusion of self-congratulations over past achievements characterized the first annual state convention of the California Electragists, held at Del Monte, Oct. 1 and 2, 1926. Quite to the contrary, indeed, was this meeting of electrical contractors and dealers, both in its closed sessions for members alone and in its even more outspoken open meetings to which representatives of jobbers, manufacturers and power companies were invited.

Almost without exception the speakers who addressed the meetings squared themselves fearlessly toward the particular problem under discussion and let go verbal "lefts" and "rights" which made their effect felt. It is not often such frankness is exhibited in a convention. The novelty of this very situation contributed in no small way toward making the convention one of the most significant and important in electrical history in the West in many years.

The only regret of those in charge of arrangements was that every contractor in California could not have been present to hear some of these talks, particularly that of Joseph A. Fowler, president of the Association of Electragists, International, the honor guest at the convention and its most distinguished speaker. His address, given at the close of the convention, Saturday afternoon, as a culmination of many similarly frank discussions in previous meetings, welded the various problems of the Electragists into a solid front and left no doubt as to the contractor-dealer's place in the sun.

President Fowler Carries Through

Characterizing the electrical contractor as one of the anchor posts of a four-cornered industry, Mr. Fowler went on to say that the contractor in the past has been satisfied to live to himself and has neglected industry relationships. He recounted the difficulty he had experienced when first named president of the Association of Electragists in getting an audience with the jobbers' organizations. Since that audience has been gained, he said, he has had no difficulty in convincing them that their position in the industry has been undermined by recent tendencies to holding company ownership and consolidation of central stations and of manufacturing industries. The jobbers' future, he contended, would depend upon continued relations with contractors and dealers. The contractor on the other hand, he pointed out, must make it possible and profitable for the jobber to do business through the contractor-dealer.

East and West. Joe Fowler, president A.E.I. and Harry Walker, retiring president California Electragists and now vice-president and southern division chairman.

CLYDE CHAMBLIN
Newly elected president of the California Electragists.

The recently formed National Electrical Manufacturers' Association, bringing together the four similar and parallel associations of the past, Mr. Fowler said, was a great step forward, and would enable the Electragists to deal with one organization to promote and continue the relationship between Electragists and manufacturers in the future.

Mr. Fowler complimented the central stations of the West for their broad-gauge policies and their fine co-operation with electrical contractors. "You have no axes to grind with the power companies out here," he told his audience. He emphatically urged the Electragist to take an active part in politics because he could do so and should do so as a citizen, so that the present status of central stations in California might be maintained in the face of such agitation as that of a water and power act.

As satisfactory a situation with respect to power company co-operation does not exist elsewhere, however, Mr. Fowler claimed. He referred specifically to the misunderstanding between the wiring committee of the N.E.L.A. and the Electragists which has finally resulted in the calling of an industry conference on wiring in New York, on Oct. 15. At this conference, presided over and refereed by Earl E. Whitehorne, commercial editor of Electrical World, representatives of the four major branches of the industry, the central stations represented by the wiring committee of the N.E.L.A.; the manufacturers, the jobbers, and the contractors represented by the Association of Electragists international, will meet to discuss wiring problems.

Mr. Fowler explained in dramatic detail all the stages of the controversy arising over the proposal to use non-metallic sheathed cable, in which the Electragists were accused by the N.E.L.A. of holding up the wiring of homes for their selfish ends. In order to place the contest on an equal footing, he told with humor, "We asked a most insulting question, a **most** insulting question. We asked if it were true that electrical development had been retarded, wasn't it possible that the **cost of electricity** had something to do with it? Wow!" Yet he pointed to the hopeful signs of future understanding that should arise out of a willingness of the other branches of the industry to recognize that each had a right to existence.

Speaking of contractor organization, he declared that the failures of the past in contractor-dealer groups had been failures due to indifference of contractors to each other, a lack of fellowship and of willingness to play the game together. In recounting what the International had accomplished to elevate the contractor-dealer Mr. Fowler pointed out the simple and effective accounting system the Electragist organization had evolved and adopted. He said that the Electragists have taught contractors to estimate correctly the cost of their jobs and eliminated the biggest gambling element in electrical contracting, the guessing as to the cost of labor.

Eddie Martin will continue to record doings as secretary for another year. Art Dahl, however, only records golf scores and runs tournaments and things.

Mr. Fowler warned contractors that

their organizations were not to fix and hold up prices, that such practices, being contrary to all economic laws, always brought disaster.

What of the Future?

In recent attempted code requirement changes to allow unprotected use of non-metallic sheathed cable the code has shown itself to be but a minimum standard, subject to attack and to a certain extent vulnerable and has brought to the Electragists the realization that a higher standard is needed, Mr. Fowler said. Non-metallic sheathed cable, he said, was felt to be a backward step. What is needed is a standard of wiring even better than that prescribed by the code, so that the Electragists will have something of high quality to sell. A new standard of wiring to be known as the Electragist standard is being worked out, claiming for itself not only adequate wiring according to the code but wiring that will do the work required of it and with ample reserve.

He went on to point out the need for local organization as well as national organization, to accomplish right at home the things necessary to good business. He declared that the Electragists cannot do the Red Seal program justice until they are ready. They will not be ready, he said, until they learn first to help themselves. He urged Electragists to finance their organizations wholly themselves, get local managers, and get soundly organized.

A plan to finance, so simple that it is a wonder it had not been thought of before, was suggested by Mr. Fowler ac a logical and easy means of getting funds to run Electragist organization. The plan is that three cents or more per hour be added to the hour cost of each job figured, to be paid to the association weekly at the time pay checks are being made out. The cost of association work is thus put on actual work done and is paid for by the public, which receives its benefits from the association through better efficiency and workmanship.

In closing his stirring address Mr. Fowler admonished the Electragists not to seek membership for mere numbers but emphasized that unless new members taken in are convinced of the value of belonging and are willing to abide by and live up to the principles set forth in the Electragist code of ethics it were better they never become members.

When Mr. Fowler concluded his speech, giving his assurance that the Electragists sought no quarrel with the industry, in spite of the fact that it was necessary to make someone mad once in a while to get attention to what they had to say, and illustrating his point with a story of a negro stevedore from his home town of Memphis, Tenn., who went to war, demanded war, and found the Germans "sure are obli-gatin'," he was greeted by a demonstration seldom accorded any speaker. His speech was declared on all sides to have been a most fitting climax to an extraordinary convention.

Merchandising Paper First Day's Bombshell

Preceding Mr. Fowler's speech, and building up to it as though prearranged, was a program which in frankness and daring set a precedent for California electrical conventions. In attendance the convention, though not as large as some previous divisional conventions, was representative of the leaders in Electragist affairs from both the northern and southern divisions who will carry the convention's thought back to their divisions in future meetings. More than a hundred contractors and their families from both sections of the state attended, besides the well represented jobber, central station and manufacturing groups.

Delayed by the arrival of the special train carrying the Los Angeles delegation, the convention nevertheless quickly got under way, Friday morning, under the chairmanship of President H. H. Walker. In his opening remarks Mr. Walker declared that the work of the Electragists was truly just starting, despite work done in previous divisional meetings and that previous contractor organizations had existed before affiliation with the Electragists. He spoke of the two functions of the Electragist organization; first, that of establishing contact with others in the industry, and second, the education of its own members to higher standards.

In reviewing the first of these functions Mr. Walker pointed out that central station and jobber relations were good; that working with electrical inspectors was continuing on an accustomed co-operative plane, and that the relationship of the California Electragists with the California Electrical Bureau, representing the industry as a whole, was most cordial and that in fact the Electragists had been designated by the latter to further the Red Seal plan in California.

In its internal program the California Electragists have established estimating classes, set up accounting systems, and contributed a great deal to a better merchandising set-up.

Felix Butte, vice-president of the California Electragists and chairman of the northern division, next addressed the general meeting. He commented that this convention was the first joint convention of northern and southern contractor groups since 1913 and that it would not be the last. A welcome to the ladies and an invitation to them to attend the meetings concluded Mr. Butte's remarks.

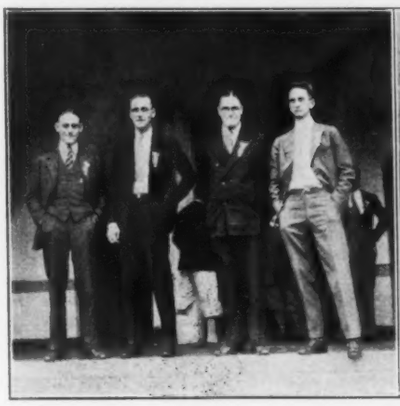
Following these preliminaries the discussion plunged headlong into that most pressing of contractor-dealer problems, merchandising of electrical appliances. O. N. Robertson, Santa Ana, Calif., Electragist, chairman of the southern division's merchandising section, read a paper prepared for the state merchandising section by himself and H. H. Courtright, manager of the Valley Electrical Supply Company, Fresno, and exploded a bombshell which set the pattern for the entire convention. Mr. Robertson's paper is reprinted in full beginning on page 303 of this issue of the Journal of Electricity.

The effect of this merchandising section report, with its declaration for the establishment of a definite trade policy contained in the resolution at its conclusion, was somewhat startling. It set forth that "through the dealer" is the most economical and logical means for the distribution of appliances to the public.

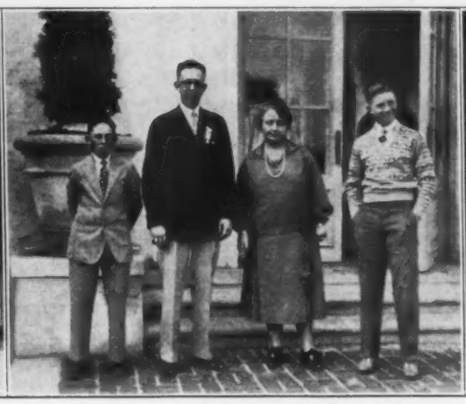
The resolution proposed by the merchandising section, setting forth these principles as a trade policy, was subsequently adopted by the California Electragists in a closed meeting.

Estimating and Motor Sections Report

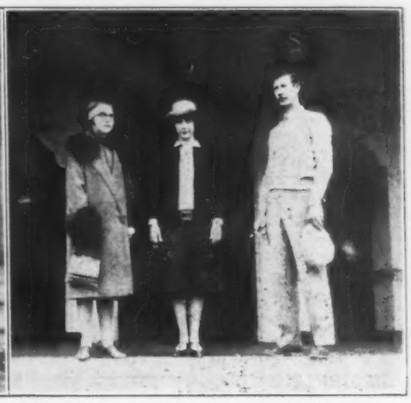
R. L. Booth, chairman of the southern division's estimating section, reported for the state estimating section, relating the work undertaken by the section in meeting with architects, improving electrical lay-outs in plans, and improving and modernizing speci-



Male quartette or what have you? Hob Barnes, Cy Geisbush, W. L. Hyde and C. A. Rowley watching the golfers go forth, or fifth.



Himself, not a moving picture! Vic Lemoge, in one of these touching society family scenes with Mrs. Vic and the two boys.



Framed in the doorway and body-guarded by Mrs. Frank McGinley and her husband, Paul, is Mrs. Needham, of Beverly Hills.

fications. "The cost data committee," he said, "was comparing typical jobs to check up on costs, looking toward more uniform estimating to care for all items." The estimator's greatest problem, that of figuring labor units, is engaging special attention, according to Mr. Booth.

"A modified form of the national Electragist system of estimating was under consideration for adoption for the southern division," he said. At the conclusion of Mr. Booth's report President Walker commented on the commendable fact that these estimating meetings were breaking down the suspicion and secrecy which had formerly prevailed between estimators and showing that a mutual understanding of each other's problems was of more value than selfish secrecy.

Norman Nelson, Enterprise Electric Works, San Francisco, reporting for the state motor section, read a paper on motor trade conditions from the May Electragist, official magazine of the A.E.I. Trade conditions in motor selling were declared to be harassed by manufacturer and jobber by-passing of the dealer under unfair conditions, wherein the jobber attempted to sell to his customer's customers, quoting prices which the contractor could not meet if he had to buy from the jobber and discrediting the contractor in the eyes of his customers as a profiteer.

A resolution, pledging support to the national committee now engaged in conference with motor manufacturers to remedy this condition, was later presented in closed meeting and passed unanimously, following discussion as to whether or not local action would get results.

Special Work in Northern Division

Reporting on special activities in the northern division, George Eldridge, field representative for the division, summarized the Red Seal activity in the division. He spoke of the recent organization of electrical contractors in Sacramento on a sound basis, permitting them an appropriation of $150 for advertising in newspapers. Out of 34 contractors, 32 belong to the association.

Mr. Eldridge said that working with the California Association of Electrical Inspectors, several small cities had been approached successfully with respect to establishment of simple electrical inspection. County inspection, also was being worked for, with considerable chance of success in several counties.

Tribute to San Rafael Contractor

Charles T. Hutchinson, vice-president and general manager, McGraw-Hill Company of California, and chairman of the California Electrical Bureau, closed the first morning's session with a review of the Red Seal activities in California under the arrangement between the bureau and the Electragists. He outlined the place of the bureau with respect to the industry and told of the bureau's promotion plans for the Red Seal plan for home wiring, indicating that every angle of this promotion was being cared for and that continued support of the Electragist was necessary.

As an example of what might be done in Red Seal selling by the contractor, Mr. Hutchinson cited the record of H. R. Eklund, Electragist of San Rafael, Calif. Mr. Eklund, in the face of stiff competition, bids for electrical wiring jobs on a competitive basis, and after getting them, proceeds to sell the owner the Red Seal idea, with the result that out of sixteen such jobs he was able to convert twelve to Red Seal specifications. One job, for which the original wiring figure was $140, he was able to build up to $2,200, including the sale of wiring, range, water heater, air heaters and an electrical refrigerator. "It is more of this type of selling that the industry needs," Mr. Hutchinson declared.

Clark Baker, National Lamp Works, talked at one of the closed sessions on the importance of illumination to the Electragist. He put forth one particular thought which merits expansion, namely that the contractor group is the single group in the industry which is without a trained sales force, and that the other branches of the industry might well support it in selling.

Tells of Cedar Point Convention

C. J. (Cy) Geisbush, executive secretary, southern division, in one of the closed sessions of the convention, reported on the convention of the Association of Electragists, International, held at Cedar Point, Ohio, to which he went as the California delegate.

Estimator and Red Seal genius, R. L. Booth, chairman estimating section, southern division, and H. R. Eklund, San Rafael's champion Red Seal contractor salesman.

Speaking of the many worthwhile meetings, the talks by leaders in electrical contracting fields throughout the country, and the work accomplished at the convention, Mr. Geisbush led up to a reading of the report of the trade policy committee of the A.E.I., presented at Cedar Point by W. Creighton Peet.

Hobert W. Barnes, assistant secretary of the southern division, reporting on that division's activities, presented a clear and straightforward plea for better personal and business relationships, for greater interest in the activities of the association, and for a consciousness of the obligations demanded in observing the code of ethics of the association. If the organization were a wealthy organization, he pointed out, its work could be paid for and done with less effort on the part of individual members, even if at a loss to themselves in personal interest. But with small working funds the success of the Electragist organization rests upon the individual members' active participation in its activities and in living up to its requirements. Mr. Barnes' talk was so sincerely and lucidly given that many regretted it had not been programmed for one of the general sessions.

The second general session, Saturday afternoon, opened with an announcement of the selection of Clyde L. Chamblin, California Electrical Construction Company of San Francisco, and prominent in Electragist and electrical circles for many years, as president of the state association for the year. In accepting the position Mr. Chamblin referred to the fact that he had been president of the state association some years ago, and that he again accepted the position with a feeling of its responsibility. For the big job, he said, he knew the present organization provided a better equipment with which to do the work.

H. H. Walker, retiring president, was named vice-president and chairman of the southern division. Mr. Walker in making the announcement spoke of the co-operation he had enjoyed from all Electragists and, too, the other branches of the industry. He paid tribute to his co-workers in a sincere and simple manner, relinquishing the chair to Clyde Chamblin for the remainder of the meeting.

Edward Martin, Sterling Electric Company, San Francisco, was returned to the post of secretary of the California Electragists.

Glen Arbogast, Newbery Electric Corporation, Los Angeles, and pioneer electrical contractor, opened the afternoon session, Saturday, with a talk on "Progress of the Electragists and the Value of the Organization to the Industry." Mr. Arbogast has a gentle, persuasive manner, and a broad sense of human values. His talk was one of the most effective in the convention, and yet the most quietly spoken.

Mr. Arbogast began with a brief review of state association history, told in a personal and intimate way. He contended that the place of the contractor-dealer was that of the most natural outlet with the public, and one of great importance to the industry. Reviewing extemporaneously the trade policy report, the charts for which still remained on the wall, he pointed out to those who had not previously heard the report, the channels through which much merchandise is shunted to the consumer. The contractor, he showed, had only bought 15 per cent of his materials direct—by passing the jobber—whereas the jobber had sold direct to consumers a much greater percentage.

"If the jobber could realize that he would be in a far better position if he ran his business through the proper channels, I am sure that he would do so," said Mr. Arbogast. "We find ourselves in a desperate situation," he added, "when we run up against competition by jobbers with our own customers. The jobber invariably gives a price concession to get the business, and we of course cannot meet it. Why is it, I ask, that in all the history of price concession it has never been known to happen that a price concession was given to a contractor, one of the regular customers of the jobber. If price concessions are to be given, why can't we contractors get them?"

He warned jobbers that this routing of supplies around the contractor is fraught with danger. The electrical contractor is fixed in the economic scheme of things. He is an absolute necessity. But the jobber is in danger of exterminating himself if he teaches others to by-pass, teaches them to get supplies direct from the manufacturer. Even the central station is not altogether secure in its position because

of possibility of government ownership, he warned, but the contractor, being closest to the ground, is a necessity. Mr. Arbogast closed his talk with a tribute to Harry Walker for his unsparing efforts on behalf of his fellows.

Water and Power Act Condenmned

Somewhat of a surprise was registered when Willian A. Cyr, associate editor of the Journal of Electricity, was announced to fill a vacancy on the program. Explaining that political ownership such as proposed in the Water and Power Act was mostly "bunk" and that it would be a relief to "laugh it off," Mr. Cyr, in a burlesque on political ownership spellbinders, provided a comedy relief to the seriousness of the afternoon sessions.

At the close of the burlesque oratorical "course in one lesson," a resolution proposed by C. T. Hutchinson, condemning the Water and Power Act as inimical to the best interests of the people of California and of the electrical industry in all its branches, was passed unanimously.

Mr. Fowler's talk, already referred to, followed and closed the convention.

Banquet and Prizes

An impromptu banquet was arranged at one end of the large dining hall on Saturday evening. Singing of "Dixie" as a compliment to Mr. and Mrs. Fowler, the awarding of golf prizes, and a presentation to Harry Walker, featured this informal meeting. A beautiful desk clock was presented to Mr. Walker by Clyde Chamblin on behalf of the Electragists. Mr. Walker responded in a heartfelt tribute to his co-workers.

The Manning-Bowman trophy for women's golf was presented to Mrs. Lester Siebert. The second prize for women's golf was shared by Mrs. May Kenney and Mrs. Evelyn Rochester. The men's trophy was tied for by Charles Goodwin and Wm. Edwards, both of Oakland, and in a toss-up for first and second place, Mr. Goodwin won possession of the trophy. Arthur Dahl, chairman of the golf committee, presented the prizes.

Ladies attending the convention were elaborately entertained, thanks to the thoughtfulness of the ladies' reception committee, of which Mesdames H. H. Walker and C. F. Butte were chairmen for southern and northern divisions respectively. A bridge party was held the afternoon of the first day, and on Saturday morning the women enjoyed the 17 mile drive around the Monterey peninsula with luncheon at the Pebble Beach Lodge. Informal dancing was engaged in each evening in the grill room of the hotel.

A.I.E.E. News

Los Angeles Section.—Official personnel for 1926-27 is as follows: chairman, R. E. Cunningham; secretary, L. C. Williams; assistant secretary, H. L. Caldwell; executive committee, Julian Adams, P. S. Biegler, J. C. Gaylord, G. M. Willis; advisory board, R. A. Hopkins.

San Francisco Section.—Official personnel for 1926-27 is as follows: chairman, D. I. Cone; vice-chairman,, W. L. Winter; secretary, A. G. Jones; executive committee—W. L. Winter, E. A. Crellin, W. R. Van Bokkelen, G. H. Hagar; joint engineering council representatives—R. C. Powell, D. I. Cone.

Meetings

Pacific Division of Electrical Jobbers Meets at Victoria

A three-day convention was held by the Pacific Division of the Electrical Supply Jobbers' Association in Victoria, B. C., Sept. 7-9, at the Empress Hotel. Four business sessions were held, at one of which C. E. Patterson, manager of the merchandising department of the General Electric Company, Schenectady, N. Y., made an excellent address on conditions in the jobbing business today. C. B. Hawley, chairman of the division, presided. The convention closed with a banquet at which Roscoe Oakes, vice-president and general manager, National Carbon Company, San Francisco, acted as toastmaster.

One of the outstanding entertainment features was the golf tournament in which J. A. Kahn, of the Capital Electric Company, Salt Lake City, won the jobbers' cup, and C. B. Hawley, vice-president and general manager of the Inter-Mountain Electric Company, also of Salt Lake City, won both the Turner trophy and the Deming trophy.

The next meeting of the division has been set for Jan. 27-29, 1927, at the Hotel Del Monte. Del Monte, Calif.

COMING EVENTS

Purchasing and Stores Section, Pacific Coast Electrical Association—
San Francisco, Dec. 2-3, 1926

Northwest Association of Electrical Inspectors—
Annual Convention—Multnomah Hotel, Portland, Ore., Jan. 18-19, 1927

Pacific Division, Electrical Supply Jobbers' Association—
Quarterly Meeting—Hotel Del Monte, Del Monte, Calif. Jan. 27-29, 1927

Results of Rocky Mountain Golf Tournament in Salt Lake

W. A. Moser, manager of the Salt Lake City branch of the Westinghouse Electric & Manufacturing Company, won the second annual golf tournament conducted by the Rocky Mountain Electrical Co-operative League of Salt Lake City, in which members of the various branches of the electrical industry participated.

Four "legs" were played, commencing in the month of May, and continuing through June, July and August. About thirty-four contestants entered the tournament. A committee consisting of R. M. Bleak, of the Utah Power & Light Company, W. A. Moser of the Westinghouse company and B. E. Rowley of the Edison Electric Appliance Company handled the tournament and arranged the handicaps. The contestants met on days outlined by the committee, the loser of each match being eliminated, the winner being advanced to the next frame until there remained but two contestants. The winner of this match was declared the winner of the "leg."

M. E. Lanning, of the Westinghouse Electric & Manufacturing Company, won the May "leg," J. .A Kahn, president of the Capital Electric Company, the June, W. A. Moser the July, and R. M. Bleak the August "leg." Each of these winners was given a prize of twelve golf balls, and the runner up in each "leg" was given six golf balls.

W. A. Moser and J. A. Kahn reached the final contest, which was won by the former. He will be presented with a suitably inscribed loving cup.

Farewell Party to Radio Man on Departure for New York

A farewell banquet was tendered by the business, civic and radio interests of the Pacific Coast, Sept. 14, at the Clift Hotel, San Francisco, to Elmer T. Cunningham, president of the E. T. Cunningham, Inc., who left recently for New York to take up his residence in that city.

That the affair presented a cross-section of the radio industry and business interests of the Coast is evidenced by the list of speakers. During it a complete program of entertainment was presented including a costumed quartet in grand opera numbers, an Italian trio of singers with accordion accompaniment, Vladimir Rossonchine, Russian concert pianist, dancing and solo numbers, an elaborate musical act and other features.

The program itself was divided into two sections. There were twelve speakers who said "goodbye and good luck" to Mr. Cunningham on behalf of the radio industry.

Book Reviews

ELECTRICAL CHARACTERISTICS OF TRANSMISSION CIRCUITS

Prepared by Westinghouse engineers and compiled by Wm. Nesbit, manager, New York Engineering Division, Westinghouse Electric & Manufacturing Company. Third edition, 1926; 317 pages, 102 tables, 104 illustrations, 9 x 12 in., cloth bound. Published by Westinghouse Technical Night School Press, East Pittsburgh, Pa.

This book represents a 100 per cent expansion over the original edition which appeared in February, 1922. The general subject matter tallies very closely with that of the original issue but has been brought up to date and subdivided more logically and more conveniently. In place of the original 16 chapters the present volume has 22 chapters.

Of particular importance as regards the usability of the book is the fact that great quantities of material highly suited to reference purposes have been included in the volume. The many tables include a wealth of reference material that should be of use to those interested in transmission line calculations.

Personals

William C. Sterne, prominent in electrical and other business and civic affairs in Denver, is president-elect of the Rocky Mountain Division of the National Electric Light Association. A resident of Colorado since 1895, Mr.

WILLIAM C. STERNE

Sterne has had an interesting industrial career. After engaging in the chemical manufacturing business, and later in the lumber and banking businesses, he started in 1905 a central station which now is known as the Summit County Power Company, Denver. With the Municipal Properties Investing Company he assumed control of the Arvada Electric Company, the Arapahoe Electric Light & Power Company and the Fort Lupton Light & Power Company, all of Colorado, and of the McCook Electric Company of Nebraska. In addition to these interests, he is president of the Littleton Lumber Company and a director of the Denver Chamber of Commerce and of a Denver bank. He is one of the organizers and past chairman of the Rocky Mountain Committee on Public Utility Information. He is a graduate of Harvard and at one period of his career spent some time in Europe in the interests of a fertilizer company. Mr. Sterne is very well known throughout the intermountain territory and always has been an active participant in affairs connected with the electrical industry in that section.

Harry P. LeClair, formerly associated with the New England Electric Company, Denver, is now salesman for Landers, Frary & Clark, covering the states of Colorado, Wyoming and New Mexico.

Thomas T. Richards has severed his connection as vice-president and sales manager of the Wagner Electric Corporation, St. Louis, after an association of twenty-one years with that company to become sales manager of the Arthur B. Shepard Corporation, New York City, manufacturers of structural steel buildings.

Fred Skeel, Western sales manager of the Crouse-Hinds Company, Syracuse, N. Y., has been visiting local jobbers in Los Angeles. This is Mr. Skeel's first trip to the Pacific Coast in five years.

H. W. Dennis, who has been construction engineer since he joined the Southern California Edison Company in 1909, has been made chief civil engineer, the title of construction engineer having been abandoned. Graduating from Cornell University in 1899 with the degree of C.E., Mr. Dennis almost immediately entered the services of the Niagara Falls Power Company, remaining with that company until 1909, when he moved to Los Angeles and began work with the Southern California Edison Company. Mr. Dennis is a member of the committee on arch dam investigation of Engineering Foundation and, as a member of the subcommittee of that committee, has had charge of the construction of the experimental arch dam which has just been built in Stevenson Creek, in Fresno County, Calif.

C. J. White, Western representative of the Tork Clock Company, not long ago spent several weeks at the company's New York office and factory on business.

A. L. Miltenberger, Pacific Coast manager of the Wagner Corporation, San Francisco, and **A. E. Herzberg,** manager of that company's transformer sales division, St. Louis, recently spent several weeks in Los Angeles in an endeavor to familiarize themselves with the needs of that territory.

J. C. Davidson, manager of the electrical department, Hendrie & Bolthoff Manufacturing & Supply Company, Denver, completed a business trip in the Western Slope territory prior to his attendance at the Glenwood Springs convention.

W. A. White and **Harold T. White** of New York City, directors of The Washington Water Power Company, Spokane, visited the properties of that company lately.

R. F. Monges, engineer in the General Electric Company's San Francisco office, returned not long ago from spending six weeks in the East in attending various meetings of General Electric engineers and in visiting the Pittsfield, Schenectady, New York and Philadelphia offices and works of that company.

C. C. Hillis, Jr., formerly city sales manager for the Electric Appliance Company, San Francisco, now is connected with the Sunbeam division of the National Lamp Works in that city.

S. J. Lisberger, of the engineering department of the Pacific Gas and Electric Company, San Francisco, represented the Engineering Section, P.C.E.A., at the executive committee meeting held in Chicago during the first group meeting of the Engineering National Section Oct. 13-15. Mr. Lisberger, who is past chairman of the P.C.E.A. Section, acted for J. G. Rollow, present chairman, who was unable to attend.

J. M. Perlewitz, of the Graybar Electric Company, **B. C. J. Wheatlake,** of the General Electric Company, **B. E. Rowley,** of the Edison Electric Appliance Company, and **D. C. Green,** of the Utah Power & Light Company, all of Salt Lake City, attended the recent National Electric Light Association convention, Rocky Mountain Division, at Glenwood Springs, Colo.

Edward Woodbury, engineer of Stone & Webster, Inc., Los Angeles, was one of the guests at a recent meeting of the San Francisco Electrical Development League.

W. D. Brill, formerly connected with the Electric Appliance Company, San Francisco, now is connected with the Gilson Electric Appliance Company, Oakland, Calif.

Harry H. Daly, sales manager, Majestic Electric Appliance Company, San Francisco, is making a business trip to important trade centers in the Middle West, contacting with jobbers and dealers in that company's waffle irons and air-heating equipment.

H. H. Jones, vice-president and general manager, Western States Gas & Electric Company, Stockton, Calif., visited in San Diego, for a few days a short while ago. Mr. Jones was for many years president of the San Diego Consolidated Gas & Electric Company.

Allan Hendricks, chief of the high-voltage laboratories and shops of the General Electric Company, and designer of the transformers and much of the special equipment at the Ryan laboratory at Stanford University, recently spent about three months in San Francisco and environs, primarily in connection with installing the 2,100-kv. equipment in that laboratory.

Clare N. Stannard, vice-president and general manager of the Public Service Company of Colorado, Denver, was a welcome visitor to San Diego recently.

Harry L. Walther, for many years identified with the utility business in southern Oregon, and more recently manager of the Southern Oregon properties of the California Oregon Power Company, Medford, recently has been chosen manager of the Oregon Public Utility Information Bureau, with offices in the Pacific Building, Portland. Mr. Walther was born in Jackson, Calif., in 1869, and after his school days, which were spent in Sacramento, entered the service of the Southern Pacific Railway Company in 1887. After nine years in the motive power department of that company he became general manager of the Yreka Railway Company, a position he held for fifteen years. Then in 1911 he entered the power business as general manager of the Rogue

HARRY L. WALTHER

River Electric Company, Medford, Ore., a subsidiary of the Siskiyou Electric Power Company. In the following year when that company was consolidated with other properties under the ownership and operation of the California Oregon Power Company Mr. Walther was made manager of the southern Oregon properties of that Company, and held that position until he was chosen by the utility companies of the state to head the reorganized Public Utility Information Bureau.

H. H. Allison, who has been associated with the sales staff of the Great Western Power Company, San Francisco, has joined the Coast Counties Gas & Electric Company, Santa Cruz, Calif., in the capacity of refrigerator salesman.

W. H. Ude, director of public relations, The Washington Water Power Company, will be commander of the Community Chest campaign this winter at Spokane.

Ralf R. Woolley, hydraulic engineer of the U. S. Geological Survey, and **C. E. Norden,** associate hydraulic engineer, recently returned to Salt Lake City after a survey of the upper Green River basin in connection with his report on the Green River.

John C. Campbell, formerly traveling auditor for the Pacific Power & Light Company with headquarters at Yakima, Wash., and now manager of the preferred stock department of the Birmingham Electric Company, Birmingham, Ala., recently paid a visit to Portland. En route he visited Dallas, Denver, Los Angeles and San Francisco.

Harold L. Doolittle, chief designing engineer of the Southern California Edison Company, Los Angeles, has been appointed chairman of the hydraulic power committee of the National Electric Light Association. Mr. Doolittle was graduated from Cornell in 1906 with the degree of M.E., entering the service of Crane Company in Chicago immediately. Resigning that position in 1907, he spent two years in the office of E. S. Cobb, consulting engineer, with offices in Los Angeles. Mr. Cobb during this time was acting as consulting engineer for the Pacific Light & Power Corporation of Los Angeles in the construction of the Redondo Beach steam plant. In 1909 Mr. Doolittle entered the employ of the Southern California Edison Company as draftsman, and immediately began the work of designing the original installation of the Long Beach steam plant. In 1918 he was

HAROLD L. DOOLITTLE

appointed assistant construction engineer of the Edison company, becoming chief designing engineer Aug. 1, 1926. Mr. Doolittle is also secretary of the Hydraulic Division of the American Society of Mechanical Engineers. In addition to his unquestioned reputation as an engineer, Mr. Doolittle has acquired considerable fame for his ability in etching. Three of his etchings are now on exhibition at the Sesquicentennial Exposition in Philadelphia.

Edgar C. Gribble of San Francisco and **A. M. Campbell** of Los Angeles, represented the Electrical Specialty Company, Inc., Pacific Coast representatives of the Mica Insulator Company, Schenectady, N. Y., at the latter's recent sales conference in that city.

E. F. Rhodenbaugh, of the faculty of the Idaho Technical Institute, Pocatello, recently spent some time studying corrosion of the cables of the underground system of the Idaho Power Company, Boise, and of the cooling water supply at the Boise substation.

Fred B. Lewis, assistant general manager of the Southern California Edison Company, attended the convention held by the Association of Edison Illuminating Companies, in Quebec, Canada, Sept. 27-Oct. 2. Prior to his departure Mr. Lewis acted as chairman of the day at a Los Angeles Electric Club meeting.

A. Manfield has been placed in charge of the newly opened salesroom of the British Columbia Electric Railway in Chilliwack, and **A. J. McWean** has been been transferred from the Vancouver office as outside salesman.

Henry Yost, Pacific Coast sales manager, Trumbull Electrical Manufacturing Company, San Francisco, spent considerable time in Seattle and the Northwest recently. While in that section he attended the Pacific Coast convention of the Electrical Supply Jobbers Association in Victoria, B. C., accompanied by **J. L. Beebe,** Northwest representative of the Trumbull company.

A. R. Markwart, vice-president in charge of engineering, Pacific Gas and Electric Company, San Francisco, **R. A. Monroe** and **E. C. Johnson,** engineer and manager, respectively, of the company's Colgate division, accompanied by **S. J. Norris** and **R. C. Tyler,** engineer and manager, respectively, of the Oroville-Wyandotte Irrigation District, recently made a tour of inspection in connection with an investigation to ascertain the possibilities of power development in the district.

F. H. Woodward, general sales manager, Great Western Power Company, San Francisco, accompanied by **T. E. Ward, manager** of the company's northwestern division, visited St. Helena, Calif., a short time ago.

E. Zinsmeyer, vice-president, Frank Adam Electric Company, with headquarters in Los Angeles, recently spent a short time in San Francisco en route north.

Clarence R. Hunt, formerly manager of the San Francisco branch of The Robbins & Myers Company, has been transferred to that company's main office and factory at Springfield, Ohio. **H. S. Jones,** who has been connected with the San Francisco sales organization, succeeds Mr. Hunt.

Dr. Samuel Stuart Mackeown, a recognized authority on the design of high-power vacuum tubes and their use, has been appointed assistant professor of electrical engineering at the California Institute of Technology, Pasadena. Dr. Mackeown goes to the institute directly from the vacuum-tube reasearch department of the Westinghouse Electric & Manufacturing Company in New York where he has been working on the development of high-power vacuum tubes. After receiving his doctor's degree from Cornell University in 1923, he was a National Research Fellow for three years at the California Institute where he worked in co-operation with Dr. Millikan on problems relating to the detachment of electrons from cold metals.

John F. Greenawalt, publicity manager of the Mountain States Telephone & Telegraph Company, and the recently elected president of the Colorado Public Service Association, entered the telephone industry from the newspaper field twenty-three years ago. He joined the contract department of the old Colorado Telephone Company after moving to Denver from Florence, Colo., where he was editor and publisher of one of the state's pioneer journals, the Florence Tribune. He gradually took over the publicity and advertising ac-

JOHN F. GREENAWALT

tivities of the company and has been in his present post for the past sixteen years. Mr. Greenawalt went to Colorado from Michigan. He is widely known throughout the Intermountain region in his capacity as an advertising man and a telephone executive. He will close his term as governor of the Colorado-Wyoming district of Kiwanis International on Jan. 1 next. He has been president of the Advertising Club of Denver and recently completed a term as chairman of the eleventh district of the International Advertising Association. As a member of the senior council of the local advertising club he will take a leading part in the 1927 convention of the Internatioal Advertising Association and the Public Utilities Advertising Association which are to meet in Denver next June. He is a member of the Denver Athletic Club, Wellshire Country Club, Mount Vernon Country Club, Denver Press Club and Colorado Editorial Association.

Obituary

C. I. McColgan, of the C. I. McColgan Company, dealer in incandescent lamps, San Francisco, died recently.

Emil Newman, for more than twenty years engaged in engineering work for the San Joaquin Light & Power Corporation, Fresno, Calif., for the last few years in a consultant capacity, died near Azusa, Calif., Oct. 3. He was 72 years of age.

Sir Ernest Maes Harvey, a director of the British Columbia Electric Railway Company and a partner of Allan, Harvey & Ross, bankers of London, England, died in London Sept. 13.

TRADE NOTES

The Edwin F. Guth Company, St. Louis, is distributing a folder just off the press describing its new and improved Aglite porcelain enameled illuminators. In addition to the regular Aglite features the new Aglite has an oval-shaped canopy permitting installation in narrow spaces; is made in keyless and pull-chain types; either type may be had with small plug-in receptacle in canopy for attachment of electrical appliances; has a smaller opal glass shade designed for new type Mazda lamp, and a shorter over-all extension. The new Aglite is adaptable to more uses, smaller in size, more symmetrical and lower in price, according to the folder.

The Pittsburgh Transformer Company, Pittsburgh, has issued Bulletin 2057, descriptive of the Pittsburgh polyphase transformer. The folder points out that, in addition to having all the inherent advantages of the 3-phase transformer, the polyphase transformer has all the advantages found in the operation of three single-phase transformers. Among other advantages are its noiseless operation, making it of particular interest to the power company whose substation are in residential sections, saving in space and in cost of installation. Copies of the folder may be had upon request.

The American Cable Company, New York, recently issued a handbook that contains much data that should prove invaluable to wire rope users. How to measure wire rope, how to and how not to uncoil or unreel wire rope, how to make an endless splice, how to seize rope properly, how to socket wire rope correctly, how to care for wire rope when both in and out of service, are just a few of the things told in the 88-page handbook on wire rope.

Century Electric Company, St. Louis, has announced new prices, effective Sept. 13, on its Type RS repulsion-start induction single-phase motors, ⅛ to 40 hp., and on its Type SC squirrel cage induction two and three-phase motors, ¼ to 50 hp. The company has issued, "There Is a Difference That Makes Them 'Keep-a-Runnin'", a folder descriptive of its Type RS motors.

Farnham & Cunningham, electrical and sales engineers of Los Angeles, have announced that they now represent the Wagner Electric Corporation of St. Louis in southern California territory in connection with transformers, both distribution and power.

Mathias Klein & Sons, manufacturers of tools for linemen, electricians and mechanics, Chicago, recently issued its catalog No. 26. The 56-page book, which is particularly attractive on account of its clear printing and uncrowded appearance, contains numerous illustrations of the tools carried, in addition to descriptions, sizes and weights. A feature of special interest is a number of full-page illustrations showing the application and advantages of certain tools. Copies of the catalog may be had upon request.

Ludlum Steel Company, Watervliet, N. Y., has announced that with its Delhi tough rustless iron it has been able to solve the problem of providing practical metallic recuperators for furnaces. Metallic recuperators have been known for some time to be the most desirable type of fuel economizer for heating furnaces, but unfortunately not many materials have been available for this purpose, says the announcement. With Ludlum Delhi tough rustless iron production in the furnace is increased greatly, with a fuel economy of 20 to 30 per cent.

"Run up the Jolly Roger, my hearties, and let's away to Jamaica to find the wrecked Spanish galleon's treasure! I've a chart of the course and a map marked with a bloody cross to show where the pieces of eight lie hid!" 'Tis Captain Kidd or Long John Silver or Blackbeard! No, 'tisn't. 'Tis "Bill" Neelands of the San Francisco branch of the Graybar Electric Company who took a leading part in the skit, "Treasure Hunters," presented at the recent semi-annual sales conference held by the company's San Francisco and Oakland houses. The playlet is described as "a play in one act (but no actors) and in one scene (but no scenery)."

The Timken Roller Bearing Service & Sales Company, Canton, Ohio, has announced the appointment of **R. C. Brower** as general manager. Mr. Brower will make his headquarters in Canton at the main plant of the Timken Roller Bearing Company, but will devote a great deal of his time to maintaining contact in the field. He is well known in the bearing industry, having been associated with it since 1913, for the past four years with the Timken company, in both the automotive and industrial machinery sales divisions.

The George W. Dunham Corporation, Utica, N. Y., manufacturer of the Dunham Whirldry washer, has been combined with the **Winchester Repeating Arms Company,** New Haven, Conn. Although the Winchester company has purchased the controlling interest, the Dunham organization will retain its identity as a separate company but will move to the Winchester plant at New Haven. **George W. Dunham,** inventor of the Whirldry washer, who becomes vice-president and director of the new concern, will continue in charge of engineering. **James McClymont,** former vice-president and sales manager of the Dunham corporation, will continue under the new regime as vice-president in charge of sales.

U. S. Electrical Manufacturing Company, Los Angeles, has issued Vol. II, No. 1, of its U. S. Motor News. "Guarding a Great City's Life and Industry," an article on the Los Angeles aqueduct system, with numerous attractive cuts, is the main feature of the paper. There is a number of shorter articles on U. S. AutoStart motors.

Driver-Harris Company, Harrison, N. J., has published data book R-26, "Alloys and Electrical Resistance," that contains up-to-date data in connection with Nichrome and the other various D-H alloys used for heating elements in electric heaters of all kinds. Description and application, properties and price lists are given of Nichrome IV, Nichrome, Comet, Advance, Lucero and Manganin, the Driver-Harris alloys, and a number of temperature resistance charts are furnished as well as numerous tables and much other useful data. The book is most comprehensive and should be of particular value to electric heating engineers.

George Richards & Company, Chicago, manufacturers of Hemco products, have announced their fall merchandising and sales campaign which centers about the Hemco display stand. This is a metal stand mounting the three Hemco plural plugs, the Hemco appliance plug and the Hemco attachment plug. The items are secured gracefully on the stand in such a way that they can be removed and sold when the board has outlived its usefulness. At periodic intervals broadsides are mailed to dealers, urging them to display this stand. These broadsides also contain merchandising ideas for dealers to use in securing more sales by use of the Hemco display stand. Letters, advertising in trade journals and the Liberty Magazine, which will afford a direct dealer tie-in, and six different plans of co-operation for jobbers are part of the campaign.

The Sta-Warm Electric Heater Corporation, formerly of Minneapolis, Minn., has purchased and now occupies at Ravenna, Ohio, a new and fully modern manufacturing plant which affords it several times its former production capacity.

Johns-Manville, Inc., San Francisco, is occupying new offices at 159 New Montgomery Street, having recently removed from its former quarters at 500 Post Street.

The Western Theater Supply Company and **The Theater Equipment Company,** both of San Francisco, have been consolidated and will be known as the **National Theater Supply Company,** with headquarters at 121 Golden Gate Avenue.